TECHNOLOGY DEPT

# Gas Journal

VOL. 284. 107th YEAR. LONDON, NOVEMBER 2, 1955 No. 4822. PRICE 1/6

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DETROIT

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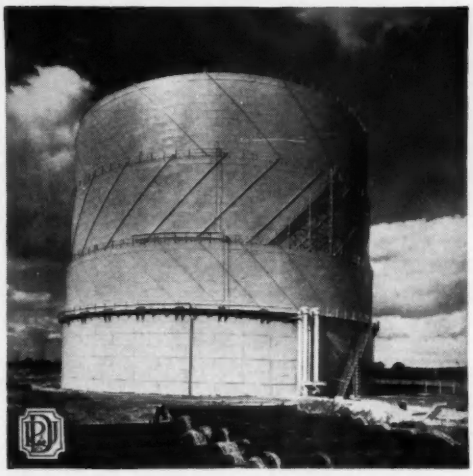
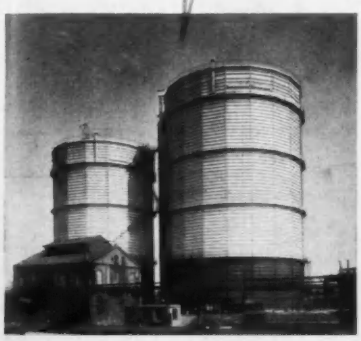
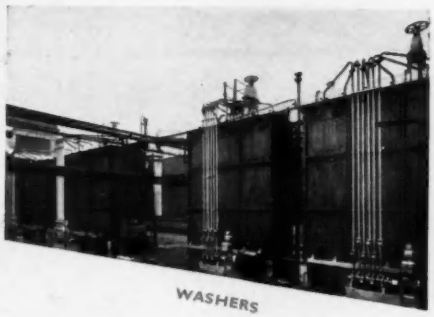


SPIRALLY-GUIDED GASHOLDERS

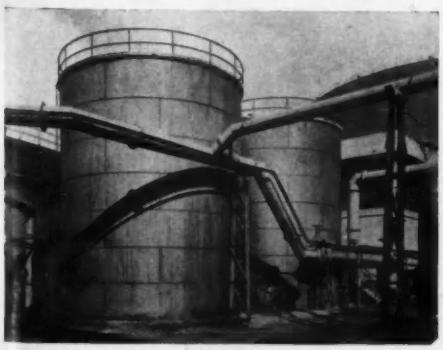


WATERLESS (M.A.N.) GASHOLDERS



WASHERS

CONDENSERS and DETARRERS



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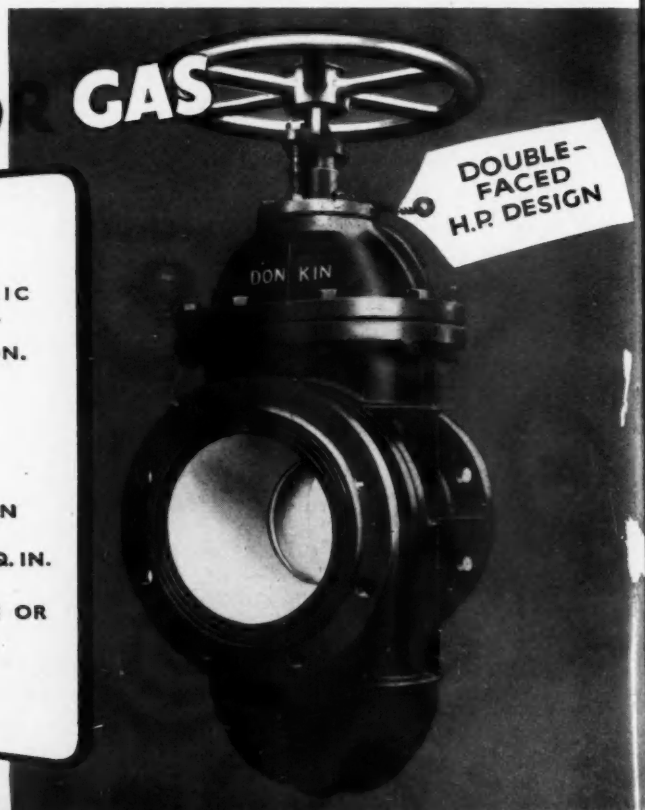


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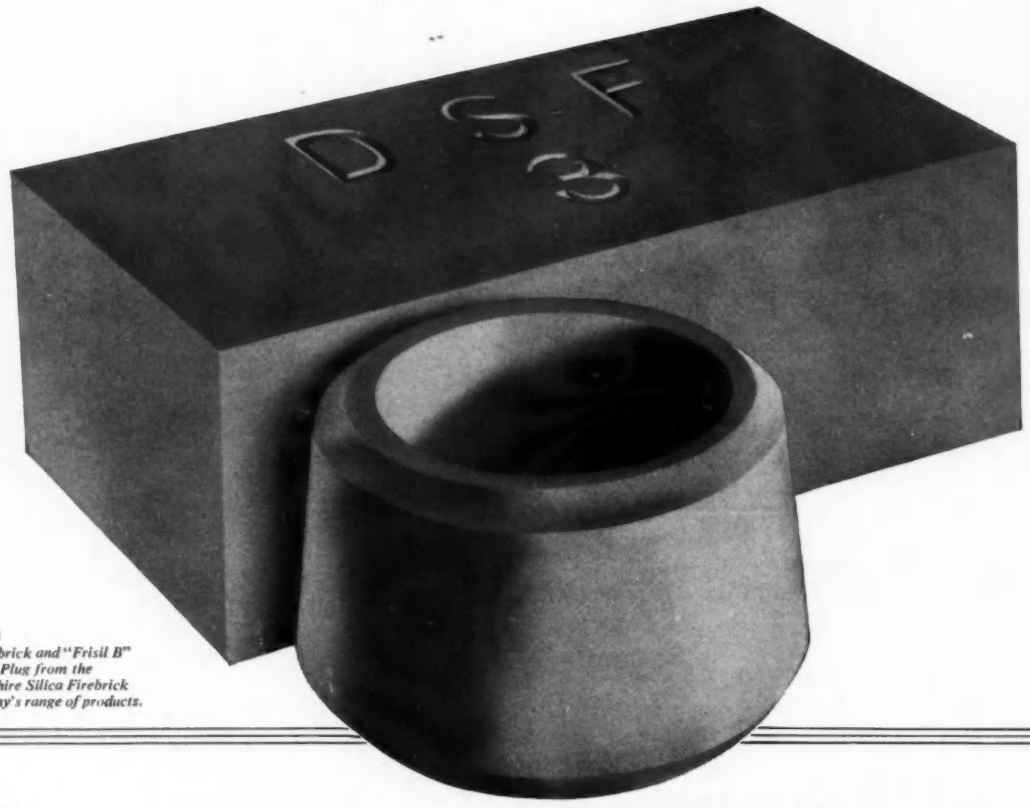


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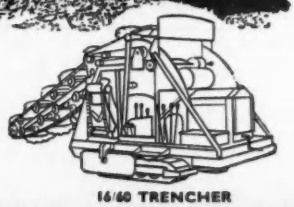

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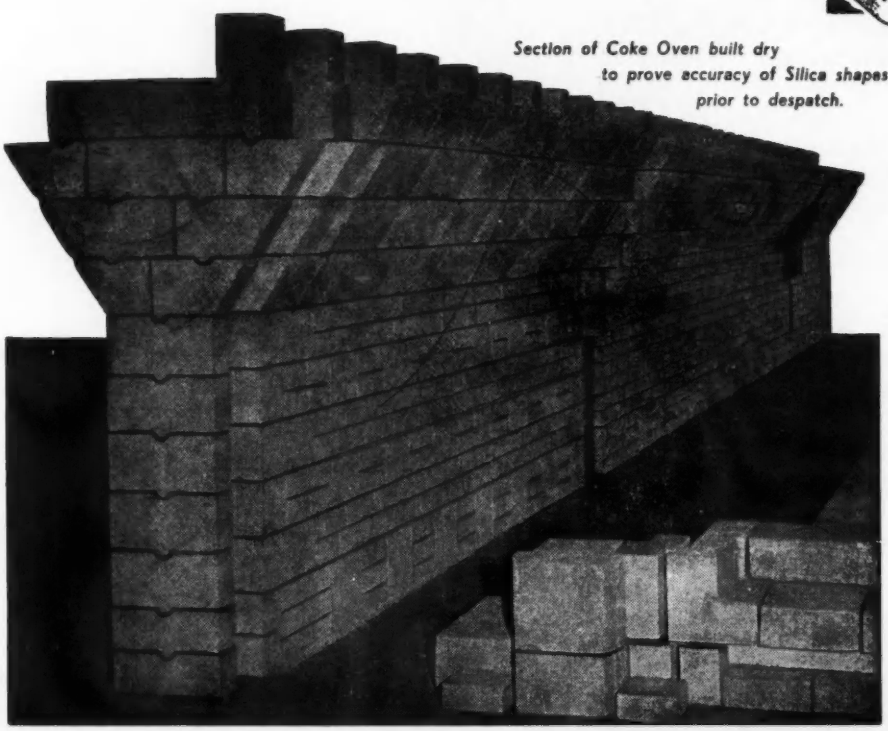

*Section of Coke Oven built dry to prove accuracy of Silica shapes prior to despatch.*

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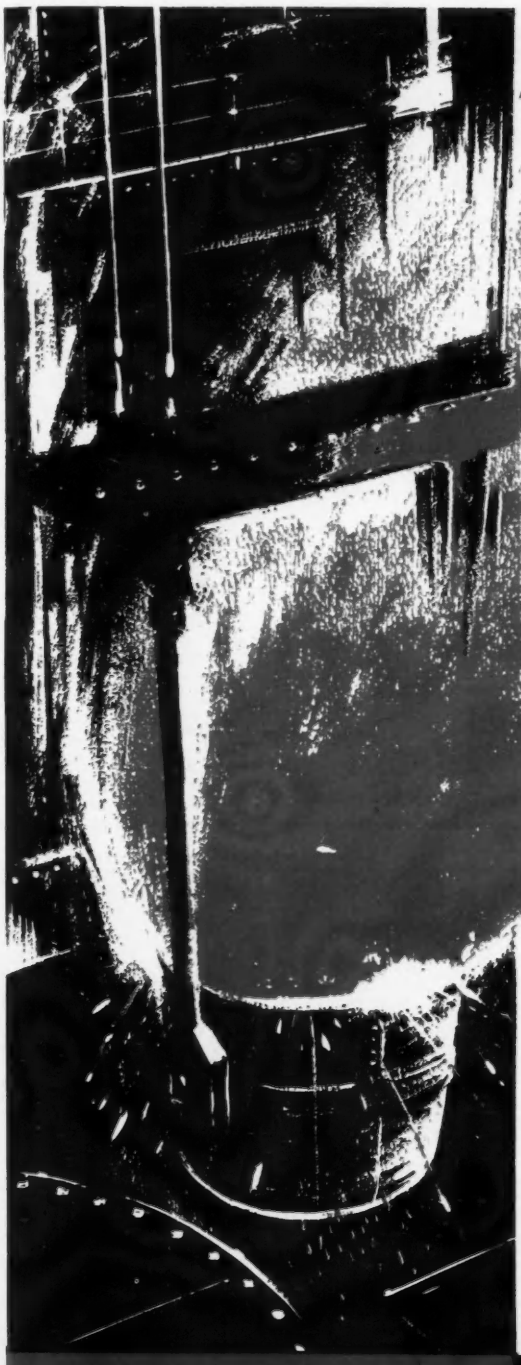

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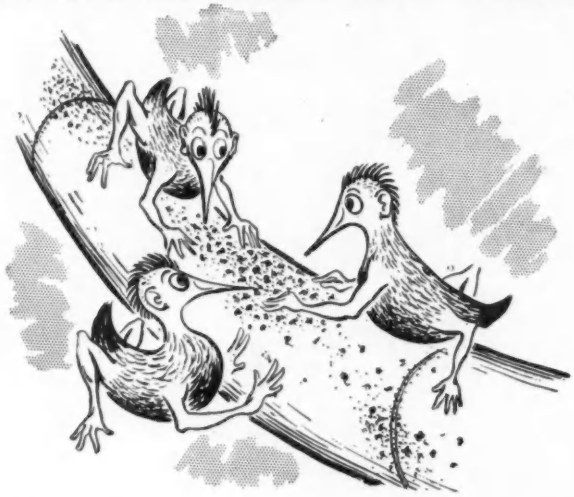

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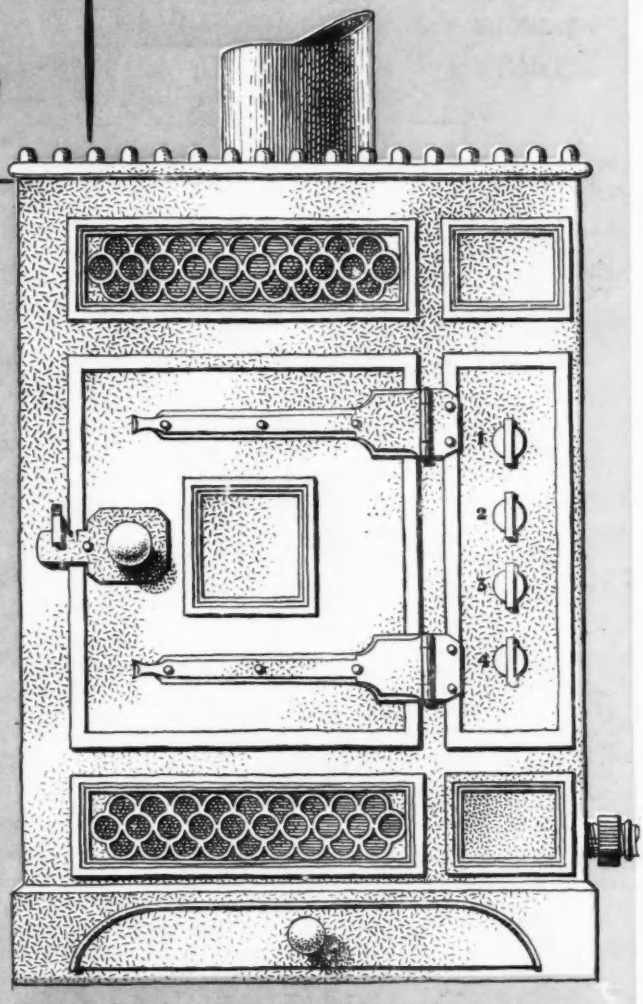
THE PROGRESS OF GAS

# 1850

Frederick Winsor, founder of the National Light & Heat Company, (forerunner of the Gas Light & Coke Co.) claimed to be the first to make it feasible to "cook, melt, boil and distil by a gas fire, either in a kitchen or dining-room". But there is no evidence that he ever made good this claim, and lighting remained the main function of gas for many years.

The earliest experiments in making gas stoves began in the 1820's; Clegg in 1824 saw men at the Aetna Iron works making a primitive type of gas oven. Then in 1841, Alexis Soyer, famous chef of the Reform Club, installed two gas stoves in the new kitchens he had designed for the club.

By 1850, several comparatively efficient gas stoves were on the market. Probably the best was Alfred King's Liverpool Gas Cooking Range, which has the distinction of being the first ever illustrated in an advertisement in the technical press—in the *Journal of Gas Lighting* (now the *Gas Journal*) for 1850, from which this illustration was taken. In the latter half of the century, cookers, heaters and water heaters were all in use.




*The Liverpool Gas Cooking Range, designed by Alfred King, about 1850*

*Issued by Imperial Chemical Industries Limited for the interest of the gas industry — an important user of*

**I.C.I. copper tubes**
**capillary and compression fittings**

*Including: 'KUTERLON' underground copper tubes*
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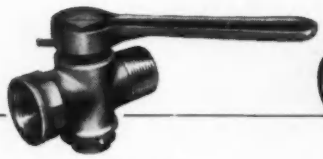
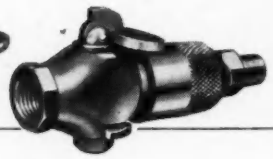
# BRASSWORK



M & F Main Cock with Iron Key.



"Simflex" Drop Lever Cock with plug in Connector

9044 SE Plug in Cock and Connector (Rubber Sleeve Joint)

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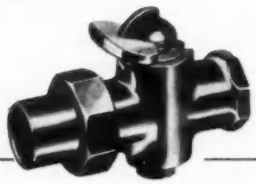
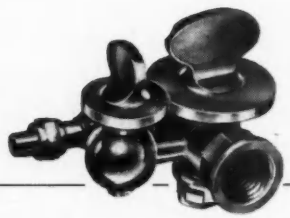


Union Cock with drop lever.

Gas Fire Cock with loose key, flanged for floor fixing.



Main and Bye-pass Interlocking Cock, for use on large-scale Catering equipment.

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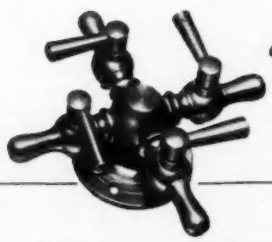
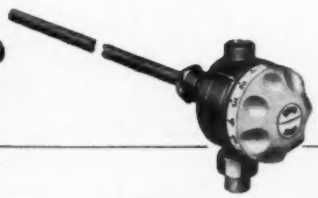


4 Way Laboratory Bench Cock, for Laboratory use.



Cooker Thermostat White plastic head with figures marked in black.

**QUANTITY**

These illustrations are typical of the wide range of fittings manufactured in bulk for leading industries at home and overseas. They embody the highest standards of design, workmanship, material and finish.

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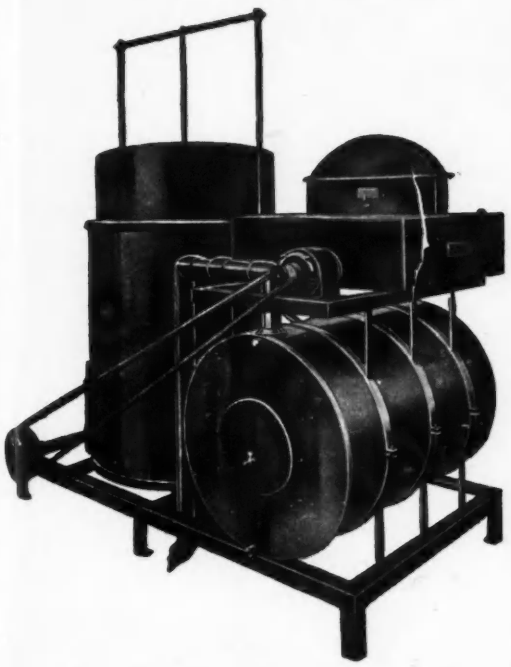

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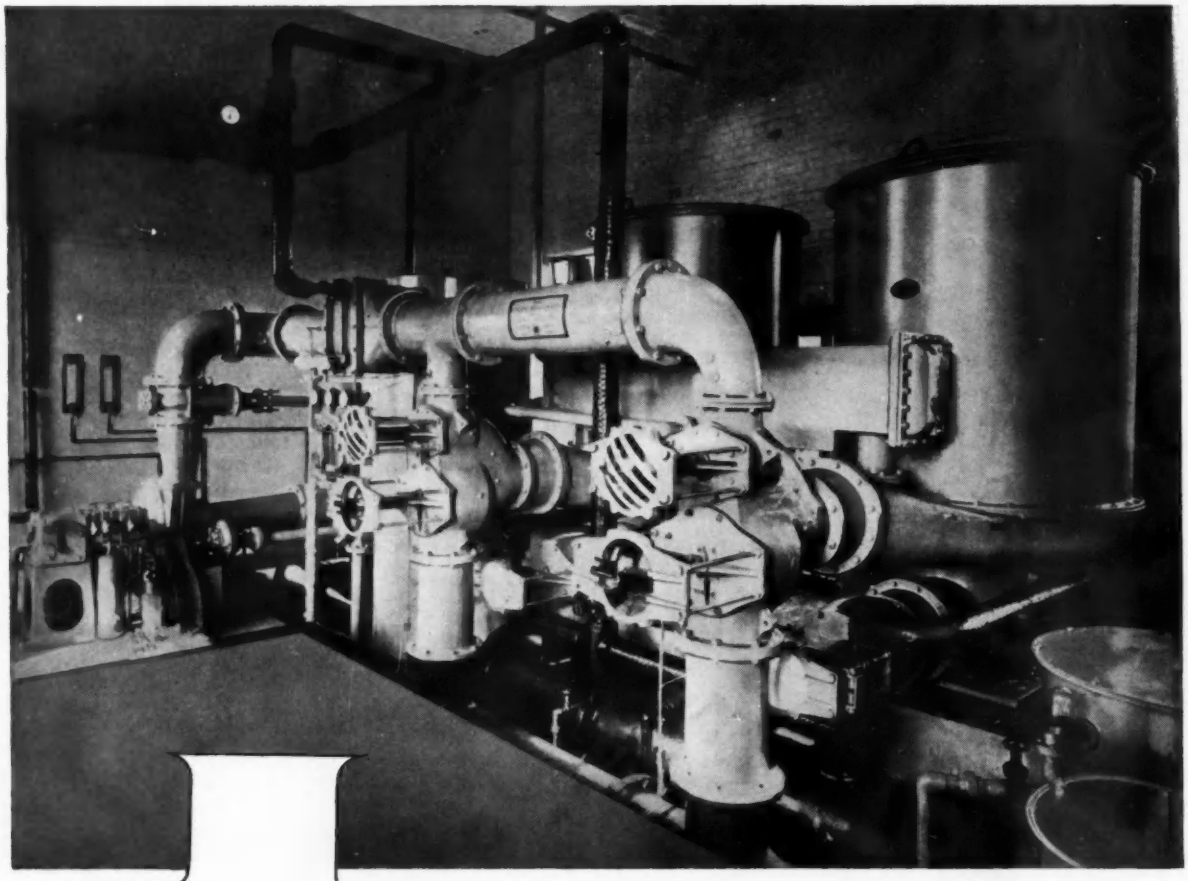

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*to cut Benzole wastage to a minimum, consult*

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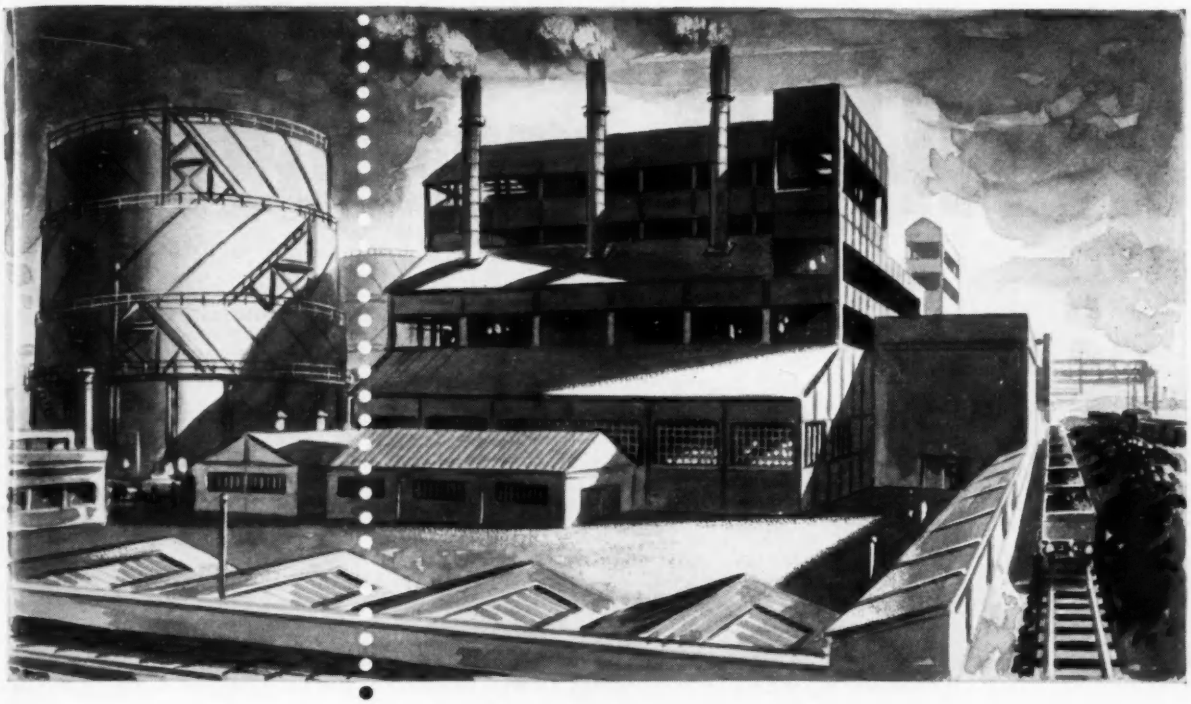

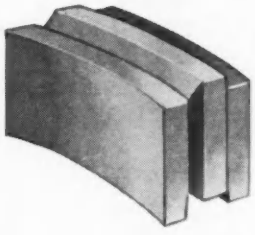

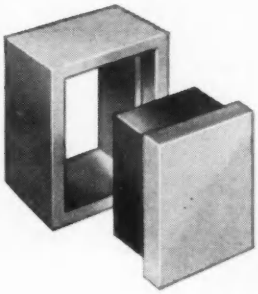

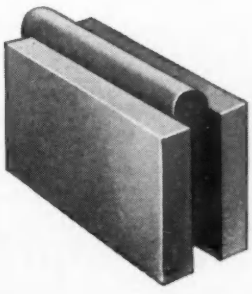

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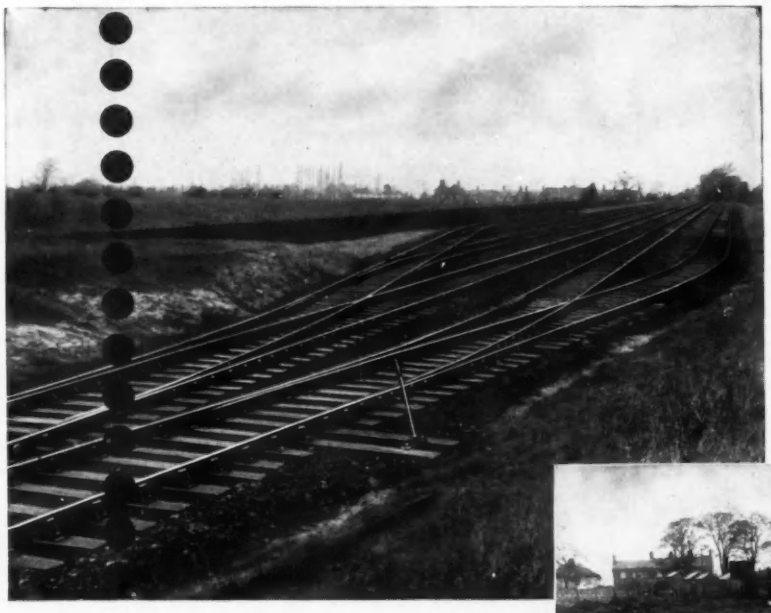

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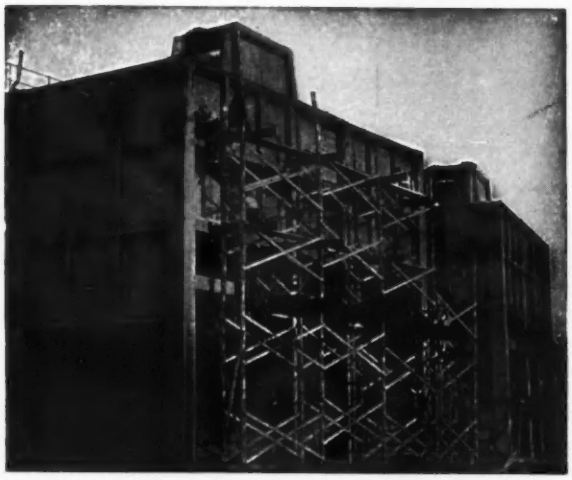

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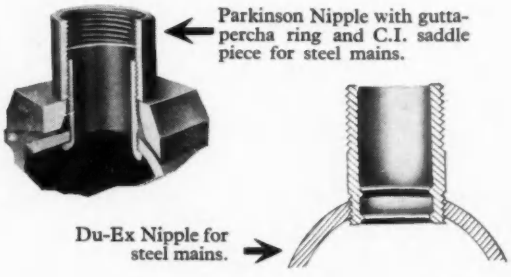


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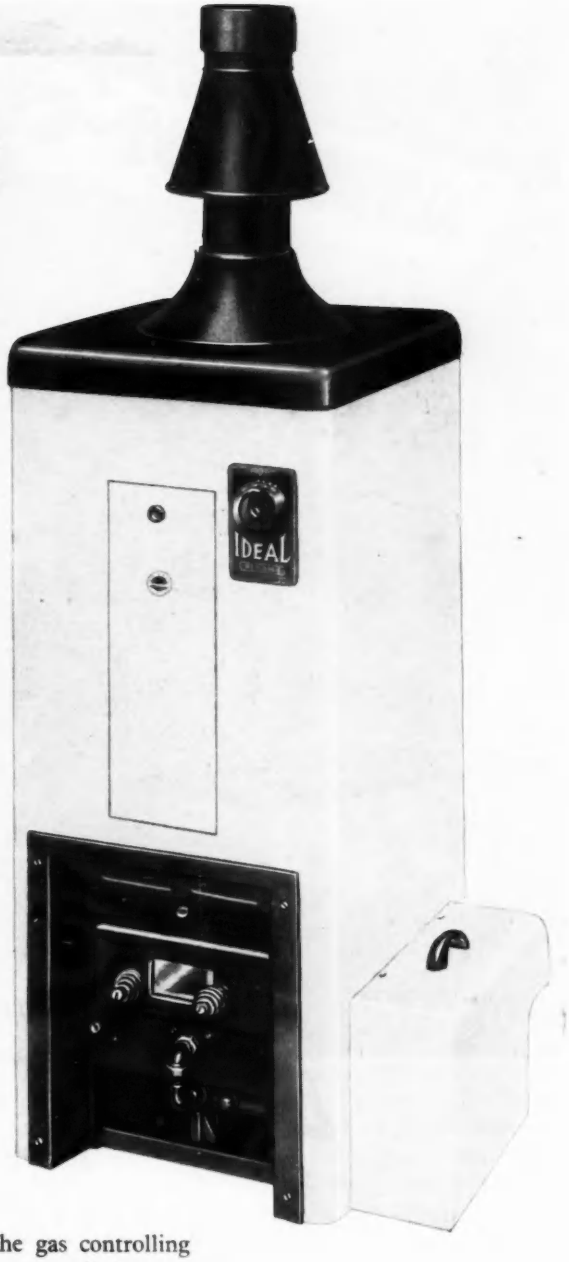


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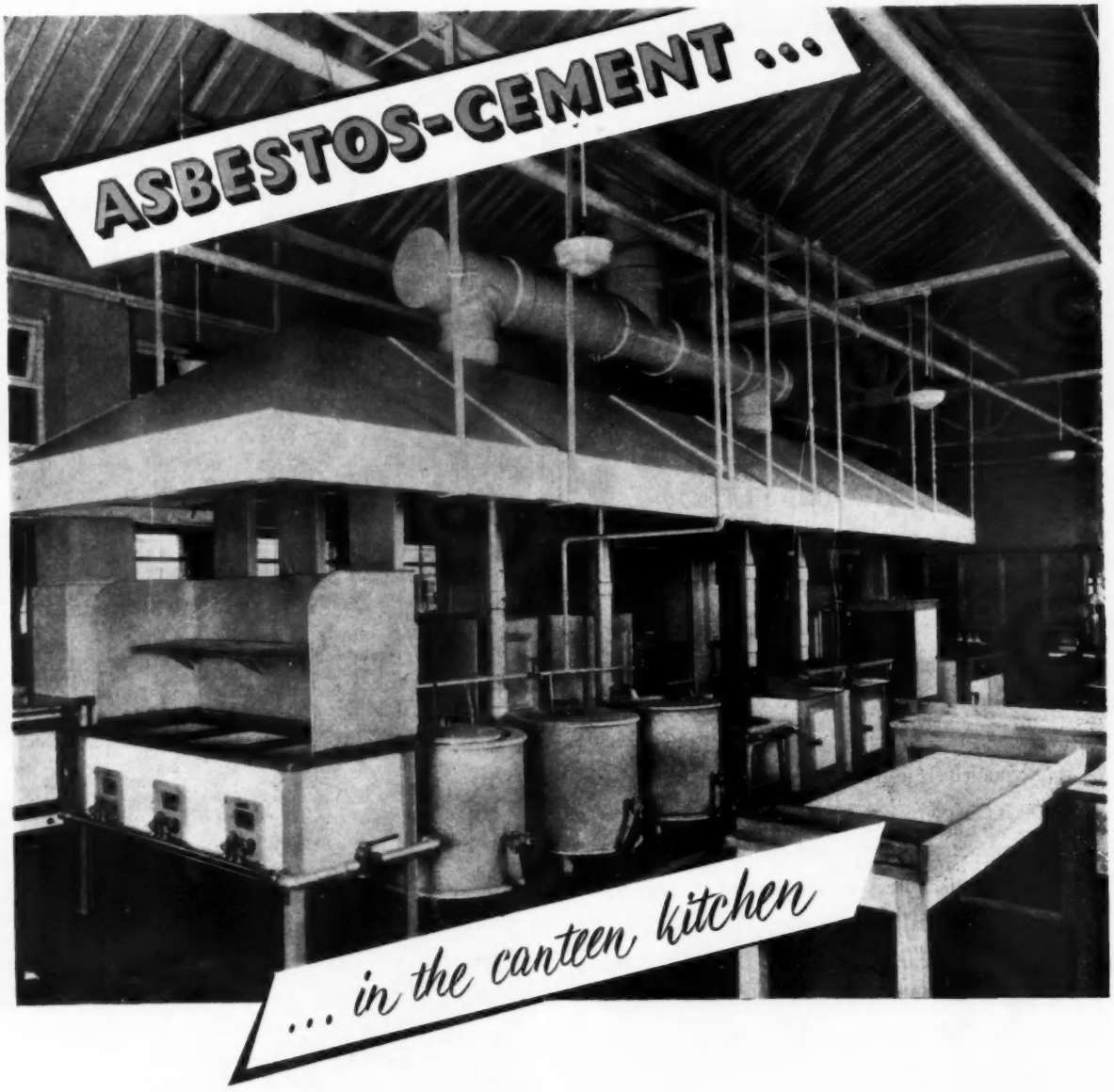


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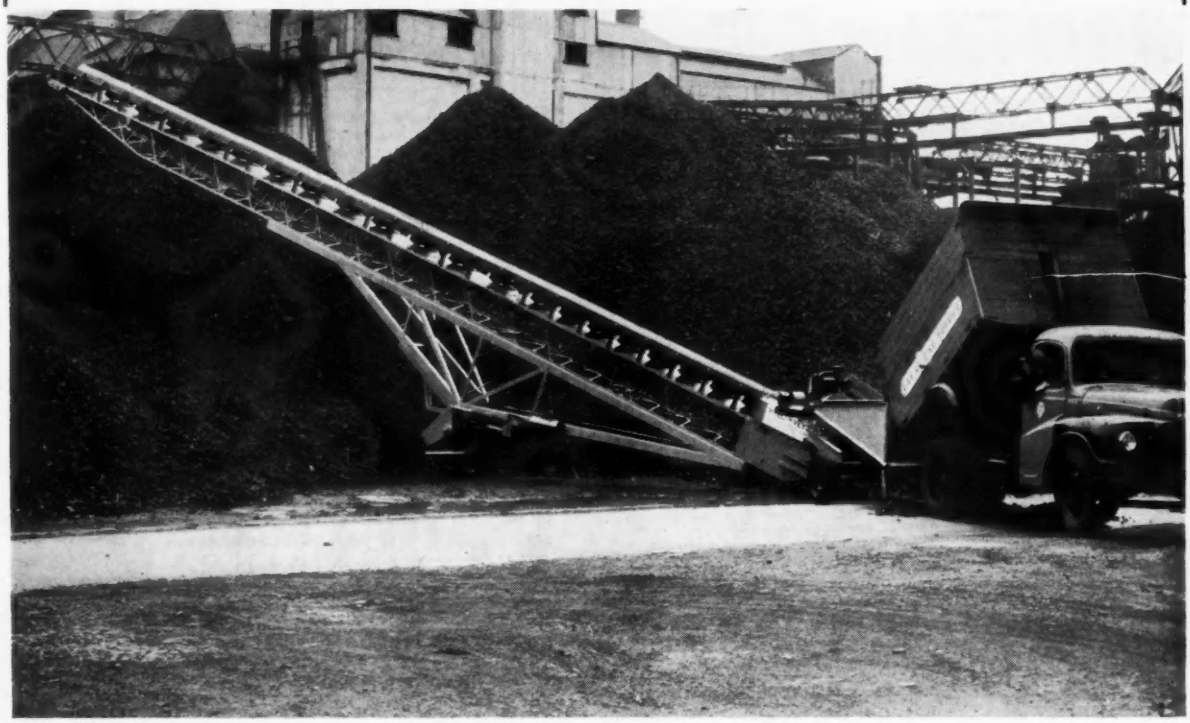

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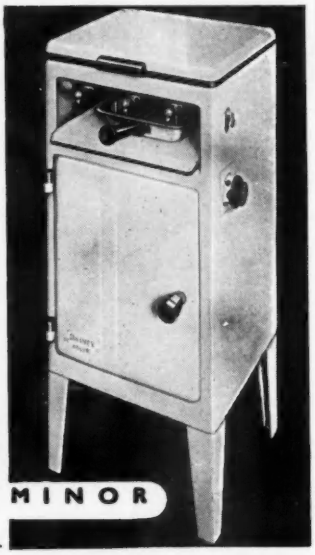

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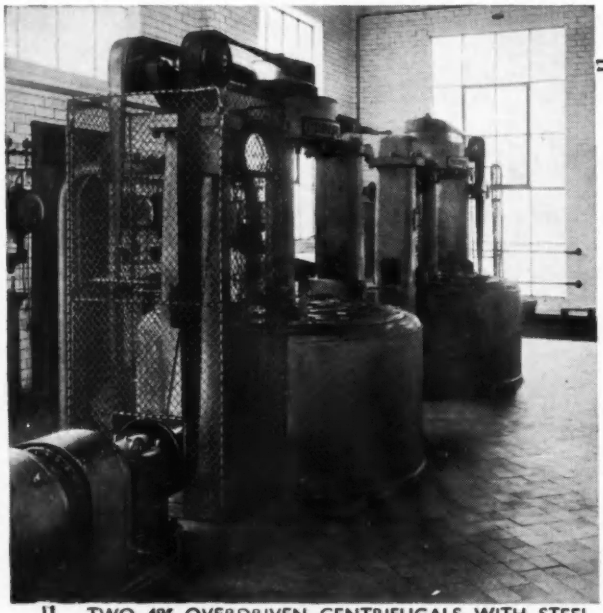

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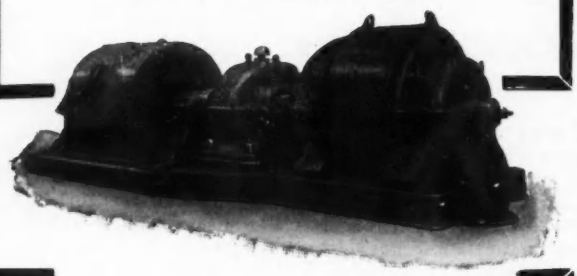

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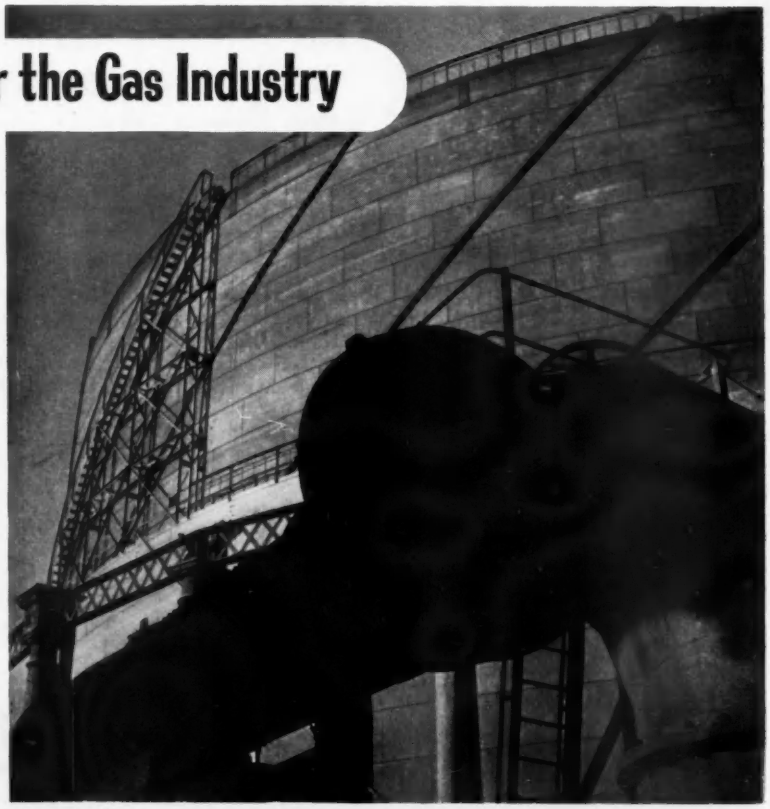

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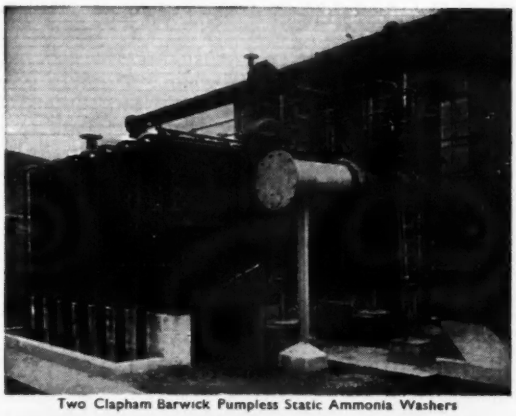

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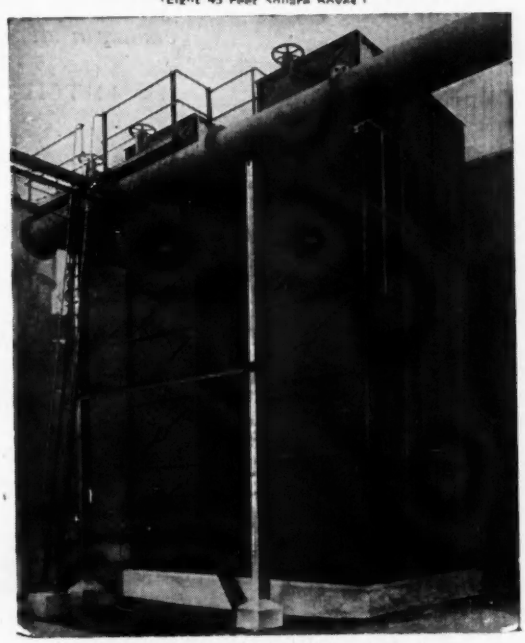

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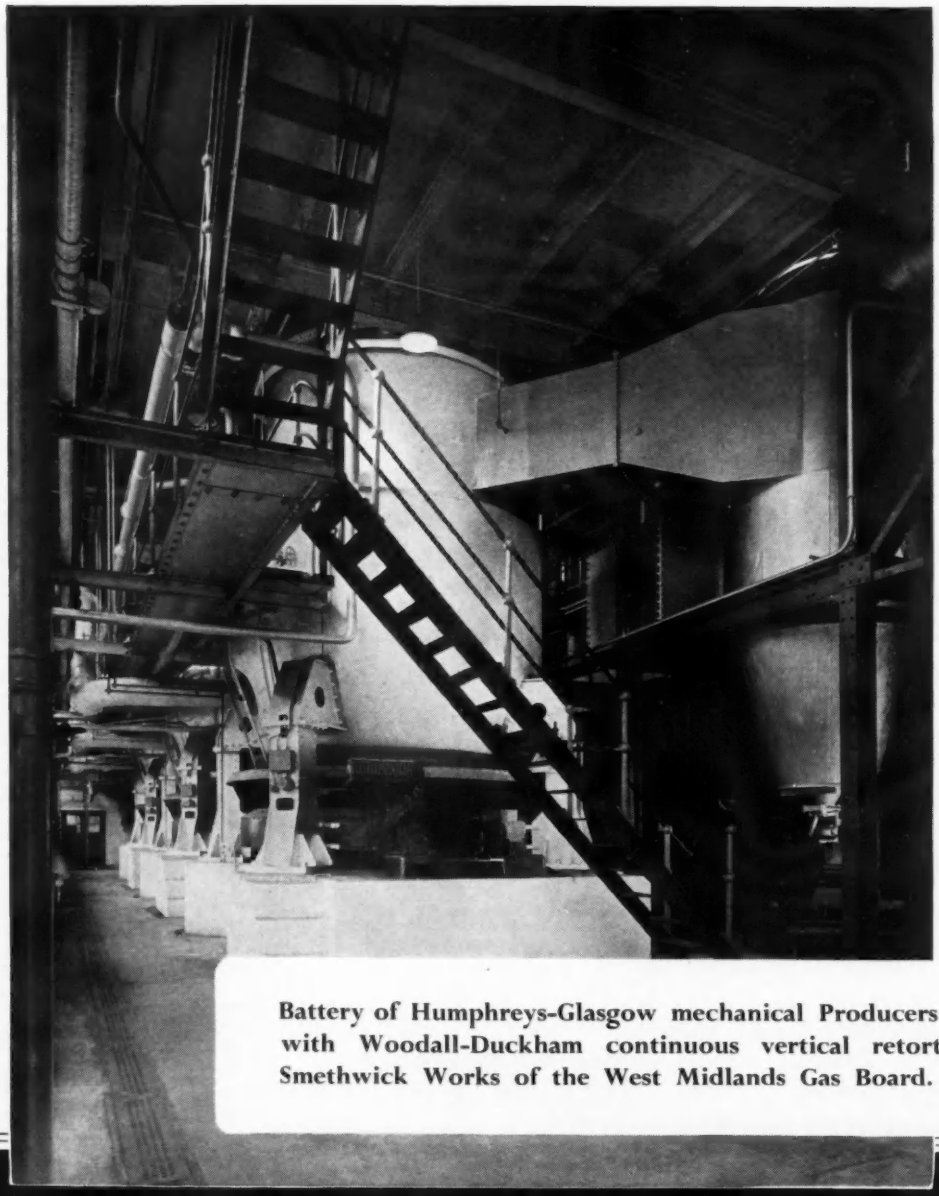

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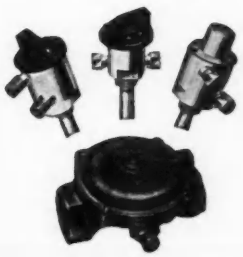

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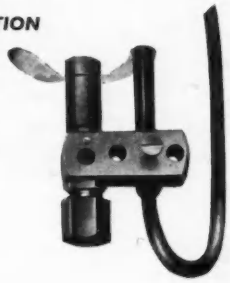

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# Gas Journal

VOL. 284 NO. 4822 November 2, 1955

107TH YEAR

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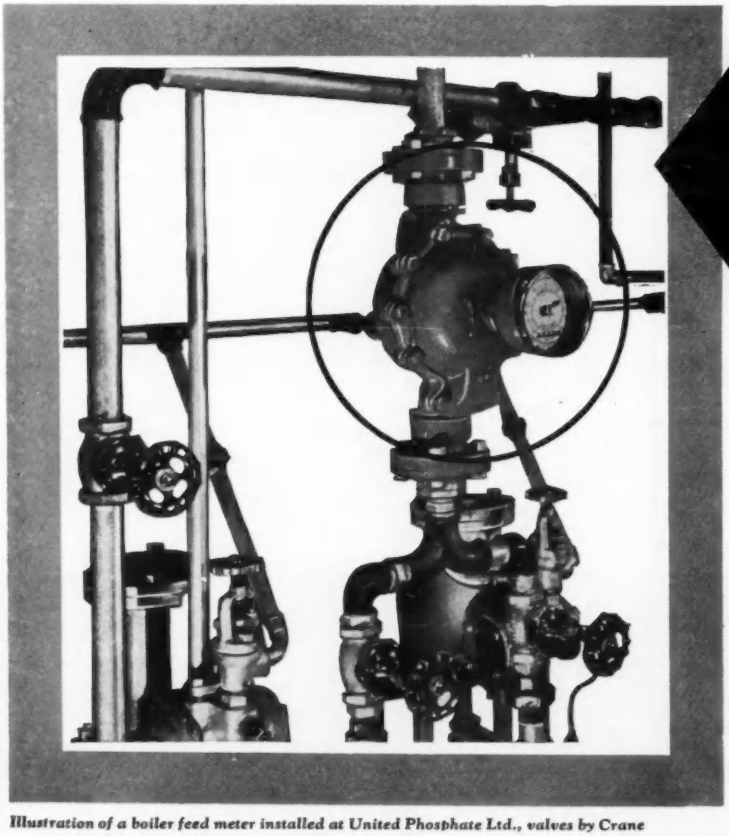

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# Gas Journal

VOLUME 284. No. 4822. NOVEMBER 2, 1955. 107th YEAR

## *Doubts About the Budget*

SO much political soil has been turned over as a result of Mr. Butler's startling Autumn Budget that it is difficult at first to assess the causes and effects from an objective standpoint. But it is not our rôle to comment upon its political aspects; neither would it be seemly for us to join in the attacks made upon such policy as it represents. It is necessary, however, to endeavour to examine the whole before the various points of this complex and in some ways anomalous budget can be looked upon in any particular light.

Mr. Butler appears to have courageously tackled a situation brought about in part by his earlier budget; that the latter is now being assailed as an 'electioneering budget' can well be overlooked in view of the axe his potential executioners have to grind. One would think however, that the Chancellor would have been wiser than to have left himself vulnerable on this occasion to such easy accusations as 'class warfare.' It is not easy to understand how he hopes to equate the actual money saved in curbed spending with the statements which have occasionally been made to the effect that the inflationary spiral is, after all, first caused by a rising cost-of-living index and wage increases. In fact, almost before his voice had died from the Commons microphones the belligerent voices of the more militant trade unions were threatening a fresh round of wage demands. A re-imposition of the sixpence taken off income tax would certainly have brought abuse, but it would have quietened much more quickly than the tirade now raging about our 'unbalanced economy' which, of course, refers to the unwieldy purchase tax.

In this way, industry is in for another headache. But besides the more violent wage battle we can expect there is the almost unpalatable decision to restrict the activities of the nationalised industries. A few weeks ago we criticized the shortsightedness of a policy which curtailed the advertising campaigns of the nationalised fuel industries when at the same time it was recognized that, in the light of the Beaver Report and other obvious factors, these were in the national interest. It was said at the time, however, that the money thus saved was to be diverted to the capital projects of those industries. Now it seems as if the money is not to be diverted to any such projects. The Chancellor said in his Supplementary Budget statement that the gas industry would make do with older equipment such as carbonization plant for a longer period and cut down expenditure this year by about £3 mill.; but about electricity he said, '. . . even in the priority field of generation they have been able to postpone certain less vital projects while pressing on urgently with the nuclear power programme.' Again, one sees the point. The immediate effect is to reduce expenditure—but is this the time to frustrate the rising tide of internal endeavour? Many of the capital projects in hand and in view will ultimately yield their own results in terms of increased efficiency in fuel utilization. Is this the time to stop the clock for a few years while the financial position is put in order? It is also necessary to criticize the implications of a policy which halts the progress of one industry while leaving unfettered the latest untried method of power production. Not for one minute is it suggested that the nuclear energy programme should be held back, but neither should an industry which has served so well and which has so much to offer the modern age. Could it be that the gas industry is regarded by the Government as outdated and of secondary importance—that the magnificent projects which will utilize fuel to its utmost advantage should be classed with Government offices and 'suspended at basement level?'

In the Budget statement Mr. Butler said that in both the electricity and gas industries promotional expenditure is being cut back, and working capital employed in hire purchase activities has been curtailed. These initial measures would produce some useful savings in this year's capital expenditure, he said. In addition, owing to the funding operations undertaken during the summer, the overdraft limits of the two industries authorized by the Government had fallen from a peak of £280 mill. earlier this year to a figure of £130 mill. But it was only in the period ahead that substantial changes could be made. For that period the nationalised industries had been carrying out a more detailed survey of capital projects as well as of internal resources, the results of which would be incorporated in the investment programmes they were about to submit to the Government. The industries, he claimed,

were fully conscious that on this occasion their proposals for future investment would necessarily be examined with a much more critical eye than in previous years.

## *Interlinkage in the Hills*

THE advantages of interlinking gas producing centres so that each may help its neighbours as occasion requires are not in dispute. Certainly the North Western Area Gas Board appears to have taken full advantage of the opportunities presented by a relatively densely populated area in which gas producing stations of considerable capacity were not too far apart. Whether we should count seriously among these advantages facilities for the distribution of natural gas is a matter we shall keep to ourselves, except that we doubt whether the supply will ever be commensurate 'with the huge public demand which could await this commodity.'

Interlinkage on the plains and the moderate elevations of Lancashire and Cheshire must have been a comparatively easy proposition; indeed it had made some progress under the pressure of war time emergencies. It is a very different matter in the outlying districts where the area impinges on the highlands which lie towards the north, east and south-east. It was to a description of what has been done in the last-named direction to which Mr. Partington, President of the Manchester Junior Association, addressed himself at the Annual Meeting on October 8. He described the 'grid scheme as it has been developed in the North Cheshire Group.'

The 'capital' of the group is Stockport with a maximum daily output of about 12 mill. cu.ft. and a maximum send-out of over 13 mill. To the north-west lies the densely populated conurbation of small interlocked municipalities of Denton, Ashton, Mossley, Stalybridge, Hyde (and others) with Glossop lying west well up to the Peak moorlands. Supply in this direction will shortly be reinforced by the opening of the fine new works at Denton planned by Colonel Carr for a daily coal gas capacity of some 12 cu.ft. Hyde can send out nearly 4 mill. cu.ft. a day and when Denton is brought into operation, the small works at Glossop, at the end of the line in that direction, will be closed down. Mossley, with a comparatively new production plant, sends gas to Greenfield and Saddleworth in the Pennines. Mr. Partington's account of the working of distribution from Mossley and the possibilities arising with the introduction of Denton is very interesting.

But it is in the southerly direction that the picture will be of most interest to the outsider. Here gas is sent from Stockport as far as Whaley Bridge with branches to Hayfield, Chapel-en-le-Frith and Doveholes, all of which will be regarded as hill townships. What strikes us as particularly interesting is that an extension to Buxton does not appear to present insuperable difficulties. 'The present requirements of the trunk main into the Peak District can easily be met, using an initial pressure of 8 lb. per sq. in., but this would need to be more than doubled if the Buxton load were added to the end of the system.' There would be a case for recompression and a holder at, say, Chapel. It is rather surprising that another main has not yet been taken from Hazel Grove through Poynton to Macclesfield. No doubt the growing extent of housing in this direction will one day make such a main a paying proposition.

Mr. Partington discusses the economics of gas transmission briefly and only in general terms. Each particular case must be examined on its merits. One general proposition he permits himself: 'Pressures should never be higher than required and should undergo seasonal reduction to follow seasonal reduction in load.' But above all he invokes the dictum of the President of the Institution. 'Only by careful control of any part of carbonization or distribution plant can we be sure that full economic return is being secured for money expended.'

## *RUDIMENTS OF MANAGEMENT*

MR. C. C. Wood (Div. Gen. Man., Sheffield and Rotherham Division of the East Midlands Gas Board) stepped into the breach left open by his Chairman, to address the Yorkshire Juniors on October 8. Mr. Sydney Smith was at the time returning from the International Gas Union Meeting in New York. Mr. Wood undoubtedly did the job well. His address was a brief summary of the job of the gas manager in view of the changes that have taken place in the structure and organization during recent years. Mr. Wood described the formation of his Division and the effect of these changes on the outlook and prospects of the younger members of the industry. Two trends, he said, were evident in that advances in scientific and engineering knowledge and commercial and accounting techniques necessitated more and more use of specialists and the operational units had increased so much in size following the opportunity of geographical integration. The gas industry had thus become 'big business' and set management on a different scale.

At this point Mr. Wood turned to the operations of the manager. Many books had been written on management but he did not refer to them. It is therefore safe to assume that his ideas came from experience. That in turn makes them of more value to the Juniors to whom he was talking. His job, he stated simply, was to ensure that 'the efforts of his executive and specialist officers was co-ordinated within the overall policy laid down by the board, in an atmosphere in which they can work efficiently and amicably together and co-operate towards a common end.'

This surely is the root of the problem of management, so often overlooked by those who have not been trained to it. Technical ability or business efficiency cannot necessarily make a good manager. The man handling or man-management angle cannot be too often stressed. Instructions carried out by routine are undesirable; enthusiasm, loyalty, drive, acceptance of responsibility within the limits of the job, intelligent delegation, and pride are the qualities required. Mr. Wood considers it would be unreasonable to expect too many virtues of anyone unless he knew not only what he had to do but also the background and reasons for it. For this reason a system of Committees had been organized in his Division to carry down in formation. We understand that a great general of the second world war would not fight a battle until every soldier knew the overall plan and his part of it. In this case Mr. Wood is following a great tradition.

'The entrant to the gas industry today will tend to specialize much more than he might have done in the past,' he continued, 'there are first class prospects for those prepared to work hard for advancement. Whether in engineering, commercial or accountancy fields, knowledge of the problems of large-scale business management will be vital to those who hope to fill the senior posts in the future.'

At the conclusion to his address Mr. Wood made five important points. First: In any satisfactory organization

everyone should know to whom, and for what he is responsible. Second: The manager needs to know little about what is going right but he must know about the things that are not, and do something about them. Third: It is a mistake to get bogged down with routine work more than is necessary; time must be found for detailed consideration of current problems and the problems of future development. Fourth: It is surprising what many people can do if only they are given the opportunity. There are people who are reluctant to delegate, possibly because they think that they will delegate themselves out of a job; in practice this does not happen and adequate delegation of responsibility is one of the marks of a good manager. Fifth: That intangible factor 'human relations' is vitally important in the management of any organization, for it is by the whole-hearted and enthusiastic efforts of all employers in industry, working both in their own interests and in the spirit of service to the community that we can hope to make progress towards industrial efficiency and contentment.

We make no apology for quoting these last important points but it seems that Mr. Wood has found a formula which should aid all up and coming managers. Too often this subject is wrapped up in psychology and long words. There always has been the problem of management but only quite recently has the psychological aspect of problems been pushed forward, only too often, we submit, causing us to loose sight of our main objectives.

## *THE PROBLEM OF REDUNDANCY*

AFTER an investigation into the efficiency and cost of running the Glasgow district of the Scottish Gas Board a large percentage of the meter readers is to be paid off. About 20% of the total staff in the survey section—25 male employees—are to be dismissed. Normally five meter readings are taken annually in Glasgow, but it has been now decided that four will be sufficient. The efficiency team has now moved on to the clerical department and it has been officially intimated to the executive of the three unions involved that a total redundancy of between 70 and 100 is anticipated. Officials of the National Union of General and Municipal Workers, the British Gas Staffs Association, and the National Association of Local Government Officers, are fighting the decision and have asked the Area Board to supply them with a fully documented statement with the factors on which they based their decision. 'We appreciate,' said a union official, 'that the Board would find it difficult to absorb these 25 men elsewhere in the departments in view of the impending redundancies in the clerical staff.' So the unions have offered to operate the four-readings system for a trial period of eight months without dismissals, and to review the position at the end of that period.

The North Western Gas Board is examining the possibility of using electronic computors, both for accounting and administrative purposes and for sifting technical data. In order to examine how these computors might be used in the gas industry, Mr. D. P. Welman, Chairman of the Board, Mr. Robert Kerr, Board Accountant, and Mr. C. H. Leach, General Manager of the Liverpool Group, are now on a flying visit to America. If their hopes mature and electronic computors are introduced throughout the gas industry the result will certainly be greater efficiency and economy in the industry's administration—and more redundancies. A good deal has been said about automation and its effects upon industry, employment and deployment of manpower, and trade unionism. Of one thing we are sure, that no matter how delighted the efficiency experts may be with the prospect of 'thinking machines' both the employers and the employees are worried about the results. The North Western Board has not commented upon the proposition to instal computors and the possible outcome. The result might well be further redundancies, however, both in that area and elsewhere.

The term used in industry to imply redundancy is 'overfull employment.' This is a situation that has possibly been created by the power of organized labour, and its prime cause is probably a general fear of a return to the days of unemployment. Agreements between employers and trade unions are conditioned more by this aspect than by concern over wages. The matter of redundancy in the future will require courage, tact and willingness to appreciate each other's point of view, on the part of both the employers and the trade unions.

## *'BRIDE OF THE YEAR'*

AS we go to press, twelve young ladies are competing at the Festival Hall for the honour of being Mr. Therm's 'Bride of the Year.' The chief item in this final competition is to cook a meal suitable for the first visit of one's parents-in-law. There is also a surprise item which is designed to test the housewife's ability to deal with an unexpected emergency. The competition was the brainchild of Dame Vera Laughton Mathews, and follows a series of special events held annually by the Gas Council. In Festival of Britain year, housewives showed what they could do to contribute to Britain's achievement. Following the exhibition called 'International Competition' came last year the Youth in the kitchen contest for boys and girls under the age of nineteen.

The husbands have had to be very patient attending each round of the contest and being always in the background. They have had to put up with publicity and inquisitive neighbours. One husband has confessed that he was a little tired of being practised on. The tests have been very fair and have obviously been chosen with infinite care. One of the advantages the competitors had in the area finals, that of a personal assistant, is being doubled in the National final, to two stewards. They are not allowed in the kitchens for the cooking contest proper but are present for preparation and clearing up afterwards. It is a significant fact that many of the area finalists had studied or taught domestic science.

We wish every success to the winner of this popular competition, and would point out that in their own kitchens each of the competitors is her husband's own 'bride of the year'.

---

## CITY AND GUILDS GAS TECHNOLOGY AND FITTING AWARDS

The Council of the Society of British Gas Industries has made a number of prize awards in conjunction with the recent examination of the City and Guilds of London Institute.

*Gas Technology* (*Manufacture*): 1st Prize £2 2s. 0d. M. Gillett, age 24, technical assistant and a student at the Weston-Super-Mare Technical and Art Institute.

*Gas Technology* (*Supply*): Equal Prizes of £2 2s. 0d. to N. G. Brough, age 33, an industrial gas trainee and a student at the Birmingham College of Technology, and C. Gardner, age 29, a technical assistant gas engineer and a student of the Bridgend Technical College.

*Gas Fitting* (*Intermediate*): 1st Prize £2 2s. 0d. A. H. Eames, age 29, a gas fitter and a student of the Tottenham Technical College. Equal 2nd Prizes of £1 1s. 0d. each to L. J. Bryant, age 27, a dilutee fitter and a student of the Sidcup Evening Institute, and D. T. A. Frost, age 18, an apprentice gas fitter and a student of the East Ham Technical College.

*Gas Fitting* (*Final*): 1st Prize £3 3s. 0d. A. L. May, age 23, an assistant gas fitter and a student of the Municipal College, Southend-on-Sea. 2nd Prize £2 2s. 0d. R. A. Young, age 31, a gas fitter and a student of the Sidcup Evening Institute.

# Personal Notes

MR. T. W. JACKSON, Engineer and Manager of the Weston-Super Mare/Taunton Division of the South-Western Gas Board since April, 1954, has been appointed Engineer and Manager of the Bristol/Bath Division and is being succeeded by MR. J. D. BUTLER, at present Engineer and Manager of the Cheltenham District. MR. F. L. WHITEHURST, Engineer and Manager of the Yeovil District, who went to Yeovil from Bath in 1954, is leaving to take over the Cheltenham District and will be succeeded by MR. T. PORTER, Engineer and Manager of the Forest of Dean District.

MR. D. H. BROWN, B.SC., previously H.M. Inspector of Factories, has been appointed Area Safety Officer, Board Headquarters of the West Midlands Gas Board. The Board has also approved the appointment of MR. R. N. HATELEY, A.M.INST.GAS E., as Assistant Engineer at the Nechells Works, Birmingham.

MR. L. A. W. BARNES has been appointed Industrial Sales Manager of R. & A. Main, Ltd., responsible for the Company's trade in large scale catering equipment throughout the country. Mr. Barnes first joined Glover and Main, Ltd., in 1920. In 1938 he was appointed to organize the works arrangements of R. & A. Main's industrial side, and carried out these duties until 1944 when he took over control of the Company's industrial business in Southern England From 1940 to 1945 he also served in an honorary capacity as a panel member of the Supply Ministry's Emergency Service Organization and was awarded the Government Certificate for Voluntary Services in the maintenance of war production and restoration of factories damaged by enemy action. Since the re-organization of R. & A. Main's Gothic Works at Edmonton in 1953, Mr. Barnes has served as Chief Technical Representative for the Company's industrial trade in London and Southern England. Actively associated with County activities in Middlesex, he is also keenly interested in athletics, and has been Captain of the R.A.M.S. Golfing Society since its inauguration.

# Diary

**November 4.**—LONDON AND SOUTHERN JUNIORS: 'London Gas Regulations,' M. E. Lee, 178-180, Edgware Road, London, W.2. 6.30 p.m.

**November 4.**—SCOTTISH JUNIORS (WESTERN): 'The Accountant in the Gas Industry.' Gas Showrooms, 522, Sauchiehall Street, Glasgow, C.2. 6 p.m.

**November 5.**—SCOTTISH JUNIORS (EASTERN): Visit to Scottish Tar Distillers, Falkirk.

**November 8.**—MIDLAND JUNIORS: Paper, 'Mechanical Handling,' H. S. Smith, Birmingham.

**November 9.**—BRITISH GAS SALESMEN'S CIRCLE (Scotland: Eastern District): 'The Smoke Menace', Dr. H. E. Seillor. Film ' 'Guilty Chimneys'.

**November 9.**—INSTITUTE OF FUEL. LONDON: 'Chimneys and the Dispersal of Smoke,' J. E. Hawkins and G. Nonhebel, Institution of Civil Engineers, Great George Street, S.W.1. 5 p.m.

**November 10.** — EASTERN JUNIORS: Address by L. W. Andrew; followed by a tour of Watson House Laboratories, London.

**November 10.**—INSTITUTION OF CHEMICAL ENGINEERS. Graduates and Students Section: 'Small Scale Gas Liquefaction', F. E. Hoare. Technical College, Huddersfield. 7 p.m.

**November 14.**—BRITISH GAS SALESMEN'S CIRCLE (Eastern Area—Tottenham Division): 'Salesmen by Accident, and Salesmen by Conviction', D. R. Griffiths, Gas Showrooms, Sydney Road, Enfield. 7.15 p.m.

# Calendar & Directory Alterations

The following changes have been notified during the past month. To keep the information in the current 1955 edition of the GAS JOURNAL CALENDAR AND DIRECTORY up to date readers are invited to note these alterations in the Directory Section.

**Page D21.**—MINISTRY OF FUEL AND POWER: R. J. Ayres, C.B., C.B.E., *Deputy Secretary*, vice Sir Laurence Watkinson, retired; E. J. Meadon, *Accountant General*.

**Page D83.**—SOUTH WESTERN GAS BOARD: Delete N. Smith, *Development Manager*, retired.

**Page D98.**—NEWPORT: A. H. Dyer, *G.M.& E.*, vice J. F. Rust, retiring.

**Page D118.**—DUNOON: J. Hendry, *Dist.M.*, vice R. Sturrock.

**Page D150.**—SCOTTISH ASSOCIATION: W. C. Campbell, *President, vice J.* Ford; W. M. Gledhill, *Senior Vice-President;* G. Hamnock, *Junior Vice-President*.

# Obituary

ARTHUR GRAHAM GLASGOW, M.E., DSc., LL.D., M.I.C.E., Hon. M. Inst. Gas. E., Founder and First Chairman of Humphreys and Glasgow, Ltd., from 1892 until 1952 died on October 28 in Richmond, Virginia, after a short illness. It will be recalled that when Dr. Glasgow celebrated his 90th birthday on May 30 last, he was presented with a beautifully bound volume containing the signatures of 345 members of the staff of Humphreys and Glasgow, among whom he was held in the highest esteem. Our sympathy is extended to his daughter, Mrs. Ambrose Congreve and her husband who is a director of the firm.

Dr. Glasgow graduated at the Stevens Institute of Technology, later serving on its Board of Trustees. He was associated with the United Gas Improvement Company and was appointed, on its behalf, as mentioned on October 5 in reporting the recent I.G.U. visit to Philadelphia, Engineer and Manager of several gas undertakings in America. On coming to England in 1892 as a widely experienced gas engineer, he established the firm of Humphreys and Glasgow, Ltd.

Dr. Glasgow was honoured by several scientific societies, both in this country and America. The Honorary Degree of Doctor of Law was conferred on him by the Wabash College, United States, in 1950. His late sister, Ellen Glasgow, was a famous Virginian authoress whose books are greatly appreciated in this country. Dr. Glasgow spared no effort in fighting American isolationism in the 1914-18 war.

He was Vice-Chairman of the United States Red Cross Mission to Roumania in 1917. In 1939, when Poland was attacked, he wrote many letters and articles urging immediate co-operation of the American Navy to check aggression at its source.

Dr. Glasgow's great concern was always the wasteful use of coal in British gasworks and he therefore established the American water gas system of gasifying unwanted coke and small quantities of imported oil for meeting peak loads.

Many gas engineers will remember his paper to the Institution of Gas Engineers in 1935, at the close of which a worthy tribute was paid by his old friend, the late Mr. Henry Woodall, J.P., who said: 'I suppose the two most important things which it (carburetted water gas plant) did for us were, first, that it helped us to control and stabilize the coke market, and second, that it robbed our peak load of many of its terrors.' The tactical use of water gas as emphasized by Dr. Glasgow has done much to increase the efficiency and cheapen the cost of gas manufacture.

# New Aspects of Distribution Technique*

A. D. L. Copp, A.M.I.C.E., M.Inst.Gas E., Distribution Engineer to the North Thames Gas Board, describes some of the latest techniques practiced by this Board in the laying and protection of gas mains.

THE title of this paper necessarily implies that there are some departures from past methods and some new orientations in thought being practised by the gas engineers responsible for distribution. Indeed, this is so, and it can be seen that every gas board is vigorously enquiring into new ideas and techniques which help to make the distribution of gas safer and more economical. Even the word 'gas' needs more definition; for while, until recently, 'town's gas' indicated coal gas, water gas, or a mixture of these, we now contemplate 'tail' gas, natural gas, methane from coal mines, liquid petroleum gas, and liquefied methane. 'Mainlaying' is to a certain extent becoming 'pipelining' and distances and pressures grow greater.

When last year my late friend Alexander Tran asked me for this paper (and after his untimely death your Chairman honoured me with his request) I felt diffident on one account; that is because my Board, the North Thames Gas Board, is rather a special case. It distributes a large volume of gas over a comparatively small geographical area, and as is well known, the economical way to do this is to use large pipes and small pressures. Such a system is not very exciting technically, as are some of the schemes being carried out by other boards where pressures of hundreds of lb. per sq. in. are contemplated. I, therefore, propose to confine myself to descriptions and discussions of some specialized items which it is hoped are of common interest and wide application.

### Supporting Pipelines Above Ground

Most supports of earlier times consisted of cradles of cast-iron or steel lined in the concave surface with lead sheet; the objections to this simple arrangement are (1) that corrosion takes place on the 'bed' of each support which cannot be painted, (2) there is no control of movement due to thermal expansion and contraction, and (3) stresses cannot be imposed on the pipeline so that it can be treated as a continuous beam, or a cantilever.

The next development was the use of rollers so that linear expansion took place without relative movement between the pipe and the cradle, but this got rid of none of the three objections. Our first essay in dealing with a long steel main was with a 12 in. pipeline of over 300 yards between Slough and Windsor; the shape in plan followed the gentle curve of the railway viaduct and bridges, to which the attachments were made. The supports were bracket and chain, and this method overcame the difficulty of corrosion (and in this case) control of thermal effects. Three expansion joints of the gland type were incorporated, and the only trouble experienced on the pipeline has been due to one of these, which tended to draw out too far. We thereupon promptly locked it up rigid, realizing that because of the curve of the line and the free-hanging, no expansion joints were needed and that they should not have been put in the scheme. This has been the start of a slow drift away from purpose-made expansion joints and has led to the new idea of controlled expansion which is described later.

The next interesting crossing designed was that of the 36 in. medium pressure main crossing the River Thames at Putney. Here our designers had to deal also with requirements laid down by the Transport Commission, particularly regarding electrical isolation of the main both from the bridge structure and from the ground at each end of the bridge. There are some novel features in the design. Corrosion of the pipe due to inaccessibility at points of resting is overcome by the welding-on of legs which permit cleaning and painting everywhere; levelling is accomplished by the little jacks, and these in turn sit in electrical insulators. Longitudinal movement rides on the shaft and half-rollers, and is taken up by the metallic bellows joints (Fig. 1). which we believe are the largest of their type yet made. At this point it is interesting to record that during testing another river crossing at Hanworth one of this same size and type of joint accidentally suffered an extreme stress beyond the elastic limit of the steel; Fig. 2 shows what happened. However, this joint has been left untouched and

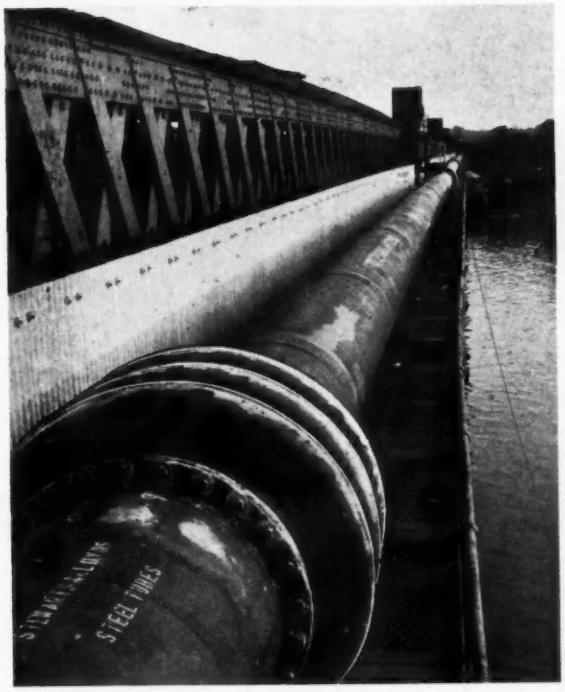



*Fig. 1. Bellows type metallic expansion joint.*

is in every way satisfactory; the welds, which can be seen, were equal to the parent metal in strength, which is our invariable requirement.

Another type of support is one used at Sunninghill at a railway crossing and, although this was designed only a year ago, it is now considered out of date; if it had to be dealt with again we should anchor the pipes firmly on the stanchions, compelling the latter to bend on their minor axis.

This latter idea is the germ of controlled expansion, which is attained by the use of strut supports of calculated section modulæ (Fig. 3). By easy calculation it is possible to determine the bending moment which is associated with any displacement of the free (pipe) ends of the struts; this displacement takes plact due to temperature changes of the pipeline. If it is assumed that the range of temperature is 30°F. to 90°F., and that the final weld is made at 60°F., then the maximum displacement at the free end of the pipeline is that due to 30°F. temperature change, supposing that the pipeline moves unhindered.

The amplitude of this displacement can be modified, however, by internally stressing the pipe-walls; this is done by installing the correct number of strut support assemblies and by the appropriate section-modulus of the struts themselves. in Fig. 3 the struts are shown round in section, so that the pipeline can move both endways and sideways, but by choosing different shapes, *e.g.*, flats, all movement can be kept to one direction. By making the line slightly out of rectilinear,

* From a paper presented to the London and Southern Section of the Institution of Gas Engineers on October 18.

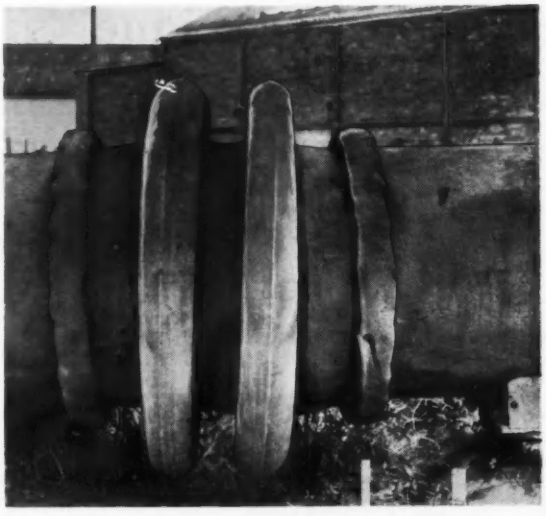


*Fig. 2. Overstressed metallic expansion joint.*

length changes can be accommodated by 'snaking,' and this type of support is ideal for the purpose, seeing that by choice of strut shape the 'snaking' can be exactly controlled both as to site and amplitude. In the figure the pipe has not been stripped of its serving where the girth is bolted on. From the corrosion point of view this is preferable, but it could not be permitted if the adherence of serving to pipe was low, or if the serving tended to flow under stress.

At the ends of straight runs of pipe it is preferred to take up length-changes by bends rather than by using expansion joints; tube forgings seem to be preferable to built-up bends, especially if the bend is highly stressed, and they are readily obtainable up to 24 in. O.D.

### Welding of Joints

Much could be written on welding techniques, but it is proposed to confine the present remarks to current practice in the North Thames Area. This specifies gas welding to B.S. 1821 or arc-welding to A.P.I. 1104. Many of our joints are gas-welded, two or three runs, and one may well ask the reason. It is simply this—a fault in a gas-weld can almost always be seen with the eye, and the welder always knows if he has attained penetration. The electric arc-welder cannot be certain of his penetration, and no visual inspection can hope to indicate the quality of the weld. It is, therefore, necessary to check electric welds with non-destructive tests; of these X-rays are extraordinarily cumbersome, gamma-rays fail to show up some root head cracks, and ultra-sonic technique has not yet quite satisfied us. Gas welding is, however, slower to perform, and speed is important on pipes of large size; hence we use only arc-welding above 18 in. O.D. pipes.

Quite essential to good welding is good lining-up, and Fig. 4 shows the type of clamp we use for the purpose. This clamp will help rectify ovality when it occurs, and also ensures matching-up of the pipe ends with best orientation. It is cheap and convenient as compared with an internal clamp, although on a project involving many welds per day there is no doubt that the internal clamp is superior.

### Making-up Bends and Specials

Many of our 'specials' are made up on site by cutting sections of pipe, and this calls for special care in assembly for welding, generally by tack-welding. Following that the necessary bevelling of the fusion faces is performed by flame-gouging. When welding, the tacks should be melted out, as they frequently contain cracks.

It is much preferable to hold a stock of factory-made steel bends of the 'tube-turn' variety, *i.e.*, seamless steel forgings. Some of the advantages of these are: No thinning of the back wall consequent upon bending pipe, smooth inside, sharp direction changes when necessary without flow disturbance, absolute dimensional accuracy, 100% strength, no waiting for cold or hot bending.

These bends are made to B.S. 1965:1953, B.S. 1640 (revised) and A.S.B. 16.9-1951, and ordinarily they are to O.D. dimensions of line pipe, B.S. 1600:1950, which is identical with A.P.I. 5L. If a bend of this type is too sharp, it can be cut at the appropriate place, and the odd length saved for future use as a 'short' bend. Made in either long or short radii the bends are prepared ready for butt welding, with 37½° bevels and standard root faces. Other fittings in the range are tees, caps, concentric and eccentric reducers, welding neck flanges, slip-on flanges, and lap-joint stub ends.

Cutting pipes for bend fabrication, branches, etc., is often done by near-guesswork or by making patterns of the cuts by hand, both methods being laborious. We have a small machine marker (Fig. 5) which outlines all contours for us

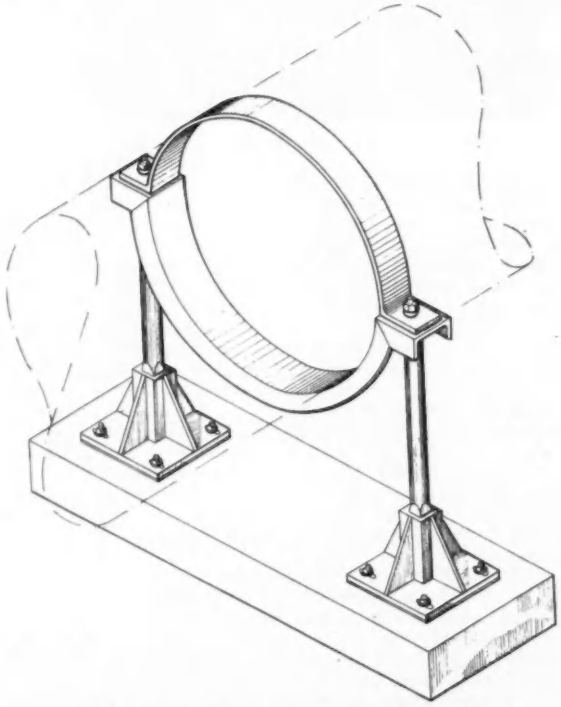


*Fig. 3. Fixed support—controlled expansion.*

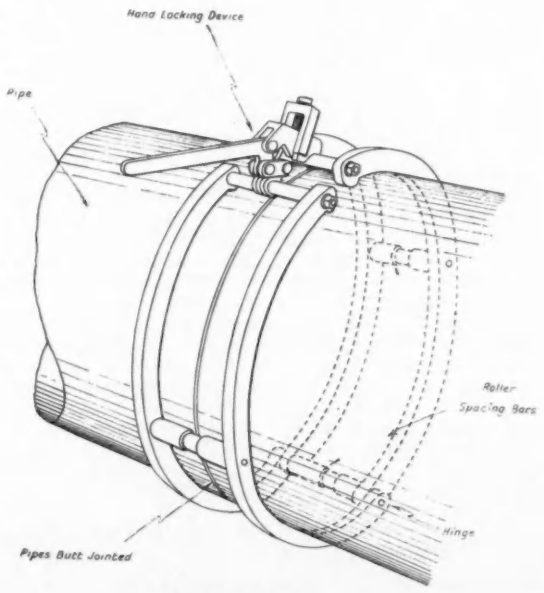
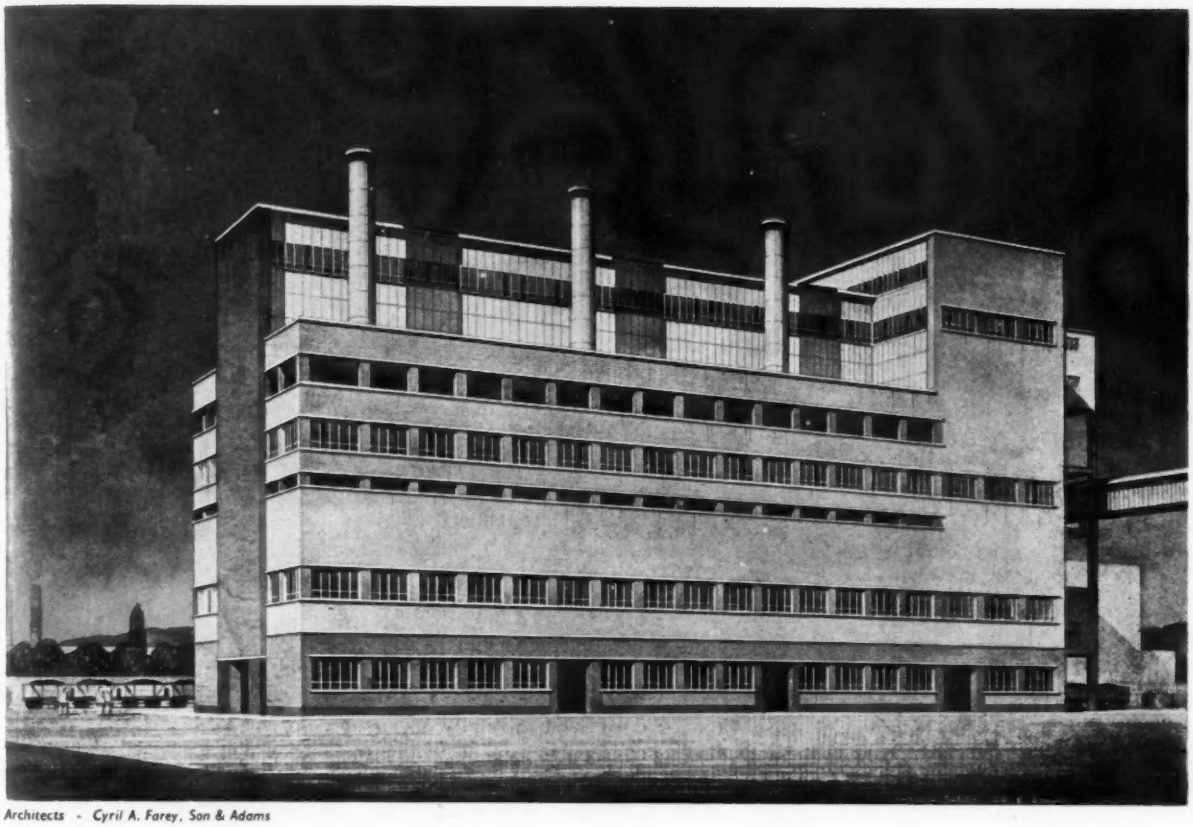



*Fig. 4. Lining-up clamp.*



Architects - Cyril A. Farey, Son & Adams

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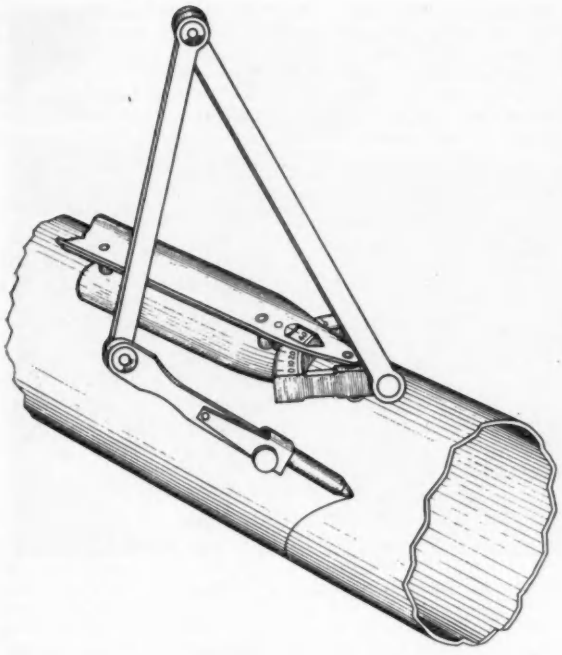

*Fig. 5. Pipe contour marker.*

very quickly and accurately. It consists of a frame or body made from two channels in accurate alignment and is fitted with a protractor or dial which is graduated on both sides. Attached to the protractor is a movable arm with three links, fitted at the end with a crayon which is used for marking the pipes.

The marking on the dial is for angles or slopes measured from a vertical line to the axis. The sector is for angles or slopes measured from the axis. One side of the dial is marked in degrees, the opposite side in inches to the foot. In operation either side of the frame may be used, and the side to select will depend upon the direction of the line to be scribed. The centre pin through the dial is tubular and a vee is cut at the opposite end so that the tool can be easily centred over a reference line.

The standard model Contour Marker will work on any size pipe from 1 in. to 18 in. diameter, a larger size model is available for pipes from 16 in. to 48 in. diameter. The Contour Marker eliminates all cutting out of templates and will mark all the way around the pipe. With the use of a table of tangents of angles up to 45° all sections of any bend can be scribed accurately, and allowances made for the wall-thickness so that the correct bevel for welding obtains. The device also marks out the cuts for branches of any size at all angles of attachment; also elbows, and bonnet-heads for pressure vessels, such as high pressure condensate receivers and caps for the ends of pipes.

### Unsupported Spans

These are very attractive to contemplate, design, and erect, and obviously they have the cheapest laying rate. One early example carried out by the Gas Light & Coke Company is shown in Fig. 6, and is an 18 in. steel tube 80 ft. in length spanning the Grand Union Canal at Southall. Erected in 1942, it took on a permanent set.

The next major effort is also a crossing of the Grand Union Canal in Ealing, and is part of the 30 in. Southall-Harrow pipeline. It is 86 ft. long with a central rise of 2 ft. 10½ in., built up of ¾ in. plates (Fig. 7). The outer covering for protection is a dense and hard bitumen composition applied by a specialist contractor, with a very long life and giving apparently full weather protection. Thermal expansion is taken up in soffit height, small clearances appearing in hot weather where the pipe enters the anchoring piers.

Another 30 in. pipeline projected involves crossing an important series of railway lines near Kensal Green Station (Fig. 8). It will be seen that the two unsupported spans are each 84 ft. in length, but the whole structure is designed as a continuous encastré beam, the maximum fibre stress being 2.6 tons per sq. in. The cost of this compared with cut and cover is in the proportion of 1 : 3. It will be apparent that the stresses are high on parts of the span, so 100% welds are required. Particular care must be exercised to detect signs of stress-corrosion in such spans as have been described.

### Loop-Lines

Sometimes it is required to connect together parallel lines which, either by variables in construction or conditions, may be expected to exhibit different thermal expansions. If the lines are comparatively near to each other at the ends, say 10 ft. or less, some means of accommodation should be incorporated. Possibly one of the neatest ways is to use two Johnson couplings at each end of a straight piece of pipe, and not to pack the backfill too tightly each side of it.

Similarly short connections can be made from an underground pipe (presumably at fairly constant temperature) to an overground pipe which experiences the full rigours of sunshine and frost; the vertical pipe has a Johnson coupling in it, and another is at the far end of the horizontal connection. The latter is free to move in a narrow built-up pit.

### Pipe Servings

Included under this heading are all forms of external wrapping and sheathing, both factory, continuous field, and hand applied. About half England must have soil which may be considered corrosive to iron and steel, and much of it with specific resistances below 3,000 ohms per sq. cm.; not that it is intended to imply that corrosive qualities are never present with high resistance soils. The first line of protection is an externally-applied diaelectric which may be in the form of sheathing or wrapping. It will be remembered that not many years ago gas engineers appeared to be satisfied with hessian as reinforcement; now they think glass fabrics a perfect substitute. However, it seems sure that it is not the last word

*Fig. 6. Unsupported span of 18 in. steel tube over the Grand Union Canal, Southall.*

*Fig. 7. Unsupported span of a 30 in. steel tube over the Grand Union Canal, Ealing.*

on the matter, and that still better materials and methods will evolve.

Nearly all the North Thames Gas Board's steel pipes are protected at maker's works either by glass-fabric and bitumen, or by sheathing consisting of asbestos fibre and bitumen. We think it is a more convenient job than field wrapping, but there are plenty of 'holidays' to be found by the time the pipes are ready to be placed. Our Area is mostly congested with underground services, and we seldom have a free unobstructed run of pipeline of sufficient length to justify continuous field wrapping.

On small steel pipes bare metal at joints, etc., is hand wrapped with a proprietary material consisting of an inhibitive paste and glass fabric, sometimes backed by a polyvinyl tape, or by the latter only. The tape-backed wrapping is of two kinds and is used on exposed services because of its neat appearance and freedom from uncovered jelly. We have not yet had enough experience of its use to judge its merits *vis-a-vis* the former type, but two features of its use require consideration. The thin type must not be stretched by too vigorous bandaging; and pin-holes in the tape have a tendency to run into long slits, a natural chain-compound tendency. The latter is partly overcome by half-lap bandaging. The stronger type of P.V.C. tape is 16 mils thick and does not require to be of double thickness; a lap of $\frac{1}{4}$ in. is ample. Our use of the two types is such that about one-eighth of our requirements is P.V.C.-backed pending further trials and experience.

It has been found to be costly to field wrap large pipes with the materials used for small pipes. The methods now in use are moulding (for joints) and wrapping with a proprietary compound and plain woven glass. All our past difficulties have been associated with bituminous materials, of which the choice is so large, but we think this proprietary compound recently adopted is entirely satisfactory. Moulding has been used by the Board for many years, but only recently have we found a bituminous material apparently giving complete satisfaction. Some joints have been exposed after a few years of interment where soft coal-tar pitch has been found in the form of a useless dry powder, while other kinds have 'curtained' and flowed off the metal.

Many of our steel specials are cut and welded on site and the question of wrapping these arises. Again it is a matter of the kind of bitumen to use; for some months, until last spring, a coal-tar enamel to the usual American pipe-line specification was used confidently. Then we disinterred some of the work and suffered a shock when we found that the enamel, all three coats of it, seemed to have evaporated or otherwise vanished, leaving little but the blackened glass fabric to protect the metal. With the same glass fabric trial was then made of the use of a proprietary bituminous compound which was recommended, but which is usually supplied for the repair of leaking roofs. So far this seems to be the material we have been seeking.

One of the reasons that large foreign pipelaying contract works are closed down for the winter months is due to the near impossibility of having really dry metal surfaces. It seems that the difficulty can be overcome by the addition of stearine amine to the tar or bitumen; this is a high molecule aliphatic amine, of solid crystalline structure, which, because of its long straight chain molecule, promotes remarkable adhesion as a surface-active agent. Used at the rate of 75 lb. to 500 gal. of tar, it has the peculiar effect of removing moisture from the pipe surface and expelling it on the expanded surface of the tar as globules of water. Moreover, it is claimed markedly to improve adhesion of the priming coat.

The North Thames Board has had many exposed steel pipes coated by a specialist firm by one of two well-tried processes.

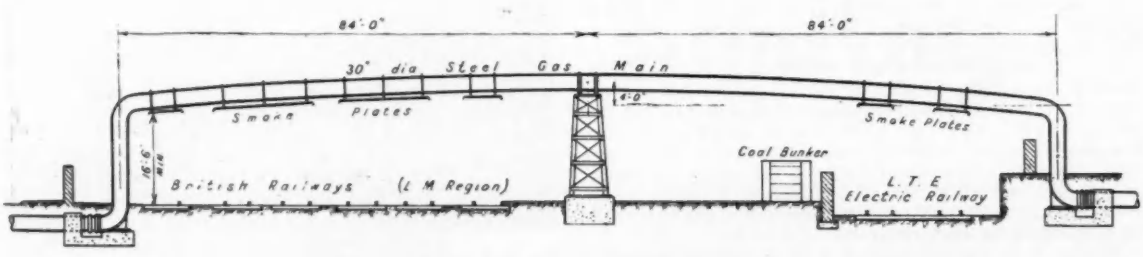


*Fig. 8. Unsupported span of 30 in. steel pipeline over a railway.*

A two-coat spray about ¼ in. thick is used when no physical interference with the pipe is likely, while an application of about 1½ in. thick and hand applied, reinforced with expanded metal or wire, cannot be hacked off even with edge tools. It is considered that the life of each type of coating is in excess of 25 years, and both are sufficiently flexible to accommodate thermal changes of dimensions without cracking.

### Metallizing

We are experimenting with the protection of (malleable cast) leak-clamps by the diffusing of chromium into the outer layers of metal; accelerated tests show that we ought to get ten times the corrosion resistance in wet clay, and the cost is much less than substitution of cast iron by bronze.

At the end of 1953 six 6 in. leak-clamps were chromized and buried in known soils of high corrosive qualities. It is intended to lift and examine these shortly, and a statement may then be possible. The cost of the process is about 1s. 6d. per lb. of metal treated, and as a comparison, the cost of metallizing bolts only for a 30 in. clamp is £1 5s. 6d.

### Protection of Bolts: Flexible Cast Iron Joints

It has been the North Thames Board's practice for many years to protect the smaller bolts being used, although they are cast-iron. A proprietary putty-like mastic bitumen has been applied by hand around the heads and nuts, and the spaces between the fronts of sockets and opposite faces of joint rings has been filled up. Hitherto the same material has been applied to bolts on Johnson couplings, but we now prefer to mould these.

Recently there has arisen a problem to which the answer is not final. It may be posed thus: Is it more economical in corrosive soils to lay cathodically-protected steel pipes, or to lay cast-iron pipes, with or without special protection? It seems difficult to dispute theoretically that cathodically-protected steel is superior, economically, to unprotected cast-iron. It is appreciated that protection of cast-iron electrically must often be preceded by bonding across each joint, as we have found the resistance of even lead-tipped flexible joints sometimes too great for the small voltages employed, and in addition the pipes and joints must be efficiently insulated from the ambient ground. A compromise we have tried is laying sheathed spun pipes with moulded joints and no cathodic protection. No results can be given for some years, but there is good reason to hope that an economical success will result; this view is helped by the comparative cheapness of factory-applied sheathing.

### Detection of 'Holidays'

In a previous paragraph reference has been made to the indigenous nature of 'holidays' in pipe servings, and the necessity for proving these cannot be over-emphasized. The ordinary American detector runs along the pipeline on rubber-tyred wheels and is ideal for thin servings and where unobstructive passage is assured; it is usually arranged for a potential difference below 15,000 V. This type is not suitable for most of our testing for two reasons. So many of our pipelines run close under underground services of other authorities that the large 'body' of the instrument housing the battery, transformer, etc., will not clear, and it is too heavy to keep lifting off and on; also 12-15,000 V are barely enough to prove serving ¼ in. thick, which is that of sheathing to B.S. 534.

Three types of instrument are used by the Board. Fig. 9 may be termed the standard instrument; the bulky parts are on the back of the operator or resting on the ground, and all that goes around the pipeline is the bridle. This is propelled by the stick handle, a very necessary article, as anyone who has transmitted 20,000 V will appreciate. The bridle can be pushed past almost any obstruction, and can be used on any butt-welded lines, but not, of course, on sleeved joints, without frequent disconnection. The arrangement lends itself to testing pipes in stockpiles as it can be carried around anywhere.

Of the two instruments of the type of Fig. 9, one gives an A.C. arc, and the other is unidirectional. If an A.C. detector is used on a really large pipe there is difficulty due to the capacity effect from the walls of the pipe. It is, therefore, our practice to use the unidirectional machine on pipes over

*Fig. 9. The detection of 'Holidays' using a standard instrument.*

18 in. O.D. We have electrodes for all sizes of pipe in use by the Board from 3½ in. O.D. to 30 in. O.D., and also a brush-type electrode which can be used conveniently on barrel or in inaccessible places.

The third instrument, which is of German manufacture, is light, handy, and comparatively cheap. It is used for small projects and for services, and the very success of its use poses the question of the advisability of equipping every service-laying gang. Such a propect is somewhat frightening, but it may have to be faced, especially in areas where cathodic protection is practised.

*(To be continued)*

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## INCREASING PRODUCTIVITY BY THE USE OF WELDING

The third meeting on Increasing Productivity by the Use of Welding conducted by the British Welding Research Association, will take place in Birmingham on November 9 and 10, 1955, in the College of Technology, Suffolk Street. The papers to be presented are as follows:

*Wednesday, November 9*

9.30-11.00 a.m.: 'Developments in Welding Pressure Vessels and Pipes,' by F. H. R. Lane, B.SC.(ENG.), A.I.M.

11.30-1.00 p.m.: 'Development in Welding Steels,' by A. R. Muir, B.SC.

2.30-3.30 p.m. and 4.00-5.00 p.m.: 'Developments in Non-destructive Testing,' by H. L. Carson, B.SC., A.INST.P.

In the morning, J. H. N. Thompson, M.C., will be in the chair and after luncheon his place will be taken by P. L. J. Leder, N.SC., A.I.M.

*Thursday, November 10*

9.30-11.00 a.m. 'What Can be done to reduce the Possibility of Fatigue Failure and Brittle Fracture,' by Dr. A. Wells, B.SC., PH.D.

11.30-1.00 p.m.: 'Metallurgical Aspects of Welding Light Alloys,' by P. T. Houldcroft, B.SC.

2.30-3.30 p.m. and 4.00-5.00 p.m.: 'Resistance Welding Ferrous and Non-ferrous Metals,' by E. V. Beatson, B.SC., A.M.I.E.E.

The chairman for the morning sessions will be Dr. L. B. Pfeil, O.B.E., F.R.S., and for the afternoon, J. Wilson, B.SC., B.COM., M.I.MECH.E.

Full details of the two-day meeting may be obtained from the Association at 29, Park Crescent, London, W.1 (telephone LANgham 7485/9).

# The Search for New Sources of Gas*

By S. C. CRATHORN, B.Sc., M.Inst.Gas E., A.R.I.C., M.Inst.F.†

THE recent record increase in the price of coal bears most heavily on the gas industry. In a full year the increased payments for coal will alone amount to nearly 6% of the gross total annual expenditure of all the area boards. For our own West Midlands Board, the cost of coal will increase to something like £4.8 per ton compared with a figure of about £3 per ton which was the average price at the time of nationalisation of the industry, only six years ago. As a result of the recent increase in price alone, coal will cost the Board an extra £2 mill. annually. Increased costs on such a scale cannot be met by internal economies, and inevitably mean increases in charges to our consumers for both gas and coke. But considerations of the selling price of coal alone do not present a complete picture. We have also to consider the high cost of transport and it is important that the distribution of coal for our industry be so arranged that the impact of transport charges is reduced to a minimum. There is considerable variation in the cost per gaseous therm of gas produced from different coals, and this variation, with transport charges taken into account, would repay study if only we were in a position to choose the coal we purchased. I would also mention the inert content of coal, the ash and moisture, over which our control becomes increasingly difficult, and also the sulphur which is sometimes present in amounts sufficient to tax our manufacturing resources on the purification side and to create difficulties in the utilization of gas. These difficulties affect our customers and in turn involve the sales and service and industrial departments.

## Coal Availability

One further aspect of the supply of coal for the gas industry gives concern, namely coal availability. The Chairman stated last year that in the case of the West Midlands Gas Board, coal deliveries had fallen short of the Board's requirements by a total of nearly 600,000 tons in the five years since vesting date. The National Coal Board target is 250 mill. tons per annum by 1965, an increase of some 37 mill. tons over last year. One wonders whether this target can be achieved, when the published figures indicate that the increase of coal output from deep mines was only about half a million tons in 1954 against a target increase agreed by the National Union of Mineworkers of 5 mill. tons and an increase in consumption of no less than 3 mill. tons. For the first six months of this year, national coal output was down by nearly 3 mill. tons, while in the West Midlands area alone, although the number of men employed at the coal face was substantially higher than last year, output was down by as much as 60,000 tons. These figures support the opinion expressed by Mr. Gerald Nabarro that we shall be unable to get more than 220 to 225 mill. tons of coal per annum for each of the next 5 to 10 years.

## Coal and Coke Demands

The steel industry's demands for strong metallurgical coke are expected to increase by 4½ mill. tons its requirement of coking coal of the best quality as early as 1958. Few of us, having knowledge of the continuing scares over shortage of steel, will quarrel with the industry's plans to increase production.

The electricity industry's requirements of coal will also increase despite the advent of atomic power stations. A Government White Paper forecasts that, with all projected atomic power stations built and contributing up to 14% of the expected output, in ten years' time the electricity industry will require upwards of 60 mill. tons of coal a year, *i.e.*, an increase of over 50% above its present demand.

With these facts in mind and remembering that the country still has no national overall fuel policy, we must applaud the Gas Council's investigations into other means of making gas available for sale, with the aim of freeing the industry from its complete dependence on coal.

In considering new methods of making gas available for sale, we may look to four sources for this gas:—

(1) Gas produced from coal by newer methods.
(2) Gas produced from hydrocarbon gases.
(3) Gas from oil.
(4) Natural gas.

## Coal-Gas by Newer Methods

Both the newer methods of making gas from coal, the Gas Integrale and the Lurgi processes, have been well tried on the Continent and are to a great extent complimentary. They are both able completely to gasify weakly-coking coals of the types which at present account for 50% of the coal production of this country. The Gas Integrale plant can be built at reasonable capital cost and can be economically operated in units of output of 1, 2 or 3 mill. cu.ft. per day capacity. On the other hand, the Lurgi process is likely to prove economical only in large units of 20 to 30 mill. cu.ft. per day. The Gas Integrale process is conducted at atmospheric pressure, the coal undergoing a low temperature carbonization in the upper pre-distillation portion of the two-stage generator. The process is cyclic, air being first admitted to the base of the generator during the blow period and then preheated steam is introduced to the base of the generator during the run period. In addition to the generator, the plant consists of a preheater, carburetter, superheater and waste heat boiler, all heated by the blow gases. In the carburetter the tar produced in the primary distillation is cracked, and if required oil can be carburetted to raise the calorific value of the gas from about 350 to as much as 500 B.Th.U. per cu.ft. The waste heat boiler supplies all the process steam required with an appreciable surplus. Yields as high as 190 therms of coal gas per ton on the dry ash-free basis have been obtained with this plant.

The Lurgi process has been used in Germany for 20 years and effects the gasification of coal in oxygen and steam at a pressure of 20 to 30 atmospheres. It has considerable flexibility towards type and grading of coal and can deal with small fuel having as much as 30% ash. Flexibility in output is achieved by varying the rate of steam supply and also the steam to oxygen ratio. Research continues, under the direction of Dr. Dent, with the object of increasing the efficiency of the process and of solving problems yet to be overcome, *e.g.*, that posed by the large quantity of liquor produced in the process, as much as four times that produced by carbonization in continuous vertical retorts, and the best way to increase the calorific value of the gas produced to a figure suitable for distribution as town gas.

Coal blending is a further method by which the poorer quality coals may be used for gasmaking. The process has been largely used by the coking industry, but very little by the gas industry. The difficulty lies in the fact that if blending is to be effective, the coals must be intimately mixed in constant proportions, so that the final mixture is uniform both in composition and grading. Thus, whereas it is often necessary to crush coal as received before carbonization, if coals are to be blended disintegrators or hammer mill crushers must be used, capable of reducing the coal completely to the small size required for efficient blending, *e.g.*, ¼ in. Furthermore, sufficient hopper capacity must be provided to enable adequate supplies of each coal component of the final mixture to be stored. Such plant and apparatus is expensive in first cost and also in day to day maintenance and this disadvantage weighs against the blending process when it is considered as a means of using poorer quality and, one presumes, cheaper coal.

## Hydrocarbon Gases

At the present time hydrocarbon gases are used on a small scale to effect a gas supply in certain country districts. At Point of Ayr, North Wales and at Whitehaven, Cumberland, it has been found advantageous to take methane from coal

* From the Presidential Address to the Midland Junior Gas Association, October 11, 1955.

† Deputy Engineer, Saltley Works, Birmingham District.

mine workings, with the dual aim of reducing the gas hazard in the mines, and of providing a supply of gas, some of which is distributed to the surrounding districts.

The gas taken from the mines contains over 70% methane and rather more than 20% nitrogen. From this a gas suitable for distribution can be produced, either by mixing the firedamp with blue water gas, or by reforming the firedamp by reaction with steam over a catalyst, to give carbon monoxide and hydrogen. The reformed gas is then adjusted for calorific value by admixture of untreated firedamp.

In certain country districts butane has been used, suitably admixed with air in the Mallet type of plant. The gas produced for distribution has a calorific value of over 700, but it has been shown that it can be substituted without difficulty for gas manufactured in conventional plant provided that suitable adjustments are made to consumers' appliances.

The suggestion that butane might be used to help meet peak demands for gas is well worth considering, but it is likely to prove a more attractive proposition when the gas can be obtained at a cheaper price.

## Gas from Oil

For many years we have been familiar in this country with the use of oil for gasmaking in the carburetted water gas process. During the past two or three decades many other processes concerned with the use of oil have been tried. The Jones process was introduced from America before the last war and is still in use in the South Western Area. This process, using fuel oil, produces a gas of chemical composition and specific gravity closely similar to that of normal town gas. In addition, carbon black is obtained as a valuable by-product.

During the last war, in the U.S.A., the twin generator Hall process was introduced. At Gennevilliers last year several members of this Association saw in operation a Hall plant constructed from a pair of carburetted water gas sets. The plant is able to produce gas with a calorific value as high as 1,000 B.Th.U. per cu.ft.

Processes developed later were concerned with the gasification of oil in air and steam, and are continuous and cyclic in operation. These include the Gas Light and Coke Company and the French G.E.I.M. processes. The gas produced in both these plants, as in the case of the Hall plant, has a high specific gravity approaching unity.

More recently improved processes have been developed in which catalysts are used yielding gases which are quite interchangeable with normal town gas. The Segas process, which uses a lime-magnesite catalyst capable of withstanding the very high temperatures achieved in the plant, has been developed with the aim of making gas from a whole range of products of the petroleum industry, including refinery gases, which it is proposed should be reformed in the plant. The West Midlands Gas Board has experimented with catalytic plants for the production of gas from oil, at Solihull and Stafford.

Several of the newer processes were produced with a first aim of using the heavier fuel oil fractions, which were cheaper than gas oil, and which it was thought might fall in price. During the last two years it has been shown at Saltley Works that heavy fuel oil in the viscosity range (Redwood No. 1 at 100°F.) of 1,000 seconds, can be continuously satisfactorily gasified on a suitably modified carburetted water gas plant.

## Availability of Oil

In connection with the use of oil for gasmaking, apart from technical considerations questions of expediency, availability and cost of oil arise. Objections have been raised because of the need to import all the oil used in this country, although this objection to the use of oil for gasmaking, must surely lose much of its force, when even gasmaking coals are being imported. Technicians have pointed out that, instead of using oil to make gas, efficiency would suggest that the oil should be used to release suitable coal, which in turn could be carbonized to yield, in addition to gas, tar, coke and breeze. When attention was turned to the use of heavy fuel oil for gasmaking it was believed by many that such fuel oil would be available at a low price. But the oil industry plans production five years ahead, and these plans are revised annually after considerations of the conclusions of market research. Furthermore, refinery techniques now allow of considerable variation in the relative production of different grades of oil, so that it is unlikely that the industry will produce any considerable amount of a grade of oil for which there is insufficient demand.

The Government is pressing industry to use oil, and the electricity industry is already well ahead with its plans to burn fuel oil. Thus the new B.E.A. 300,000 kW station at Marchwood, close to the Esso refinery at Fawley, is equipped for coal or oil firing, and may ultimately use as much as 600,000 tons of fuel oil per annum equivalent to the consumption of a million tons of coal. The C.E.A. will use fuel oil to the extent of four million tons in 1960, according to its present plans which are based on the fact that oil delivered in bulk by water can be purchased at rates sufficiently low to make oil competitive with coal for the first time.

Both the electricity and the gas industries are now realizing that oil will be purchased most economically in future by arranging to take such grades of oil as become available from time to time. This is illustrated by the recent C.E.A. agreement with Shell Mex-B.P. which provides for the use of low flash point oil, in addition to other grades, thus allowing greater flexibility at the oil refineries. Similarly, the South Eastern Gas Board and the British Petroleum Co., Ltd., have agreed to build plant to operate the Segas process at a large oil refinery in Kent. It is felt that such an arrangement will enable full advantage to be taken of the flexibility both of the oil refinery operations and of the Segas process. The undertaking is to be on quite a substantial scale, the daily gas output considered being initially 15 mill. cu.ft. rising to four or five times that amount, equivalent to a requirement of petroleum up to 200,000 tons annually, and a saving of well over a million tons of coal.

## Natural Gas

The Gas Council's plan to spend £1 mill. on exploration for natural gas was evolved entirely on account of the high price and scarcity of good carbonizing coal. Since the first discovery of natural gas in this country in 1938, several demonstrations of the presence of natural gas in various areas have been made. In the area of the first find in Eskdale a mile deep bore has yielded a supply of nearly pure methane at the rate of some 2½ mill. cu. ft. per day.

When the progress made with natural gas in other countries is considered it is clear that the matter must be pursued here. Thus, in America, in the last 15 years, the natural gas industry has advanced from one of very limited significance to its present position as the sixth largest industry supplying 25% of all the fuel energy in the U.S.A. In Holland natural gas is distributed practically throughout the northern half of the country, and it is estimated that the supply, at the rate of 5,000 mill. cu.ft. per annum, will last for at least 20 years. In Hungary a new deposit of 35,000 mill. cu.ft. has been found. The gas is at present being transported in railway borne containers to the gasworks at Obuda. It is planned to build a pipeline from the well to the works and to use this line both for delivering natural gas to the works in the winter and also for taking surplus gas from the works in summer for storage in the gas well. In Italy, the natural gas industry, which had grown four times between 1938 and 1946, has now increased to over 40 times its 1946 capacity.

The question of transporting natural gas in bulk from other parts of the world has been considered, following a lead given by the U.S.A. The barges have already been built which are to carry liquid methane from the Mississippi delta to Chicago. The problems concerned with the handling and transport of the gas as a liquid are being studied in this country by technicians of the North Thames Gas Board, so that the problems will be more fully understood before a decision is taken on the possibility of importing liquid methane in bulk by sea from the Middle East.

In many of the alternative methods of making gas we see something new. Even as our present source of energy, coal, gives signs that it will fail, we are brought face to face with the revolutionary conception of energy from atomic power. The electricity industry is able to attempt something new in trying to harness this atomic power. We in the gas industry must likewise be prepared for the advent of some revolutionary method of producing gas for sale. The well tried methods of making gas will undoubtedly be continued for many years to come but we must continually strive to progress, we must be prepared carefully to examine every suggestion, to nourish every promising recruit to our industry, for who knows when a new genius will arise.

# British Road Tar Association

## Annual Meeting and Dinner

The annual dinner of the British Road Tar Association was held at Grosvenor House, Park Lane, London, W.1, on October 25, under the Presidency of Mr. W. K. Hutchison, C.B.E., Chairman of the South Eastern Gas Board, and President of the Institution of Gas Engineers.

At the annual general meeting, which preceded the dinner, it was reported that Mr. W. Kirby and Mr. T. W. Spicer continued their work during the 1954 season as the joint accredited officers under the certification trade mark scheme. Their report on the operation of the scheme during that season was sent to all licence holders drawing attention to special points that required to be watched in the various works.

The total number of operative licences under the certified trade mark scheme is 28, covering 52 works in all parts of Great Britain. The amount of certified tar sold in 1954 was 373,415 tons. This represented 85% of the total road tar sold in the home market during that year and compared with 84% in 1953. The Brotox licence was still in operation but it was found that there was no longer a great demand for this special tar, only 2,709 tons having been sold during 1954.

In order to meet the needs of its members in Northern Ireland and Eire, where the Association had been increasing its activities during the past few years, a technical representative was appointed especially for that territory. Mr. T. J. Lynch, who was an Assistant County Engineer with the Cork County Council, joined the Association on January 1, 1955. The four technical representatives in this country had had another active season, visiting road tar suppliers and their customers in all districts, seeking to bring supplier and user into closer contact, and offering advice and assistance whenever desired. Each of them had at different times been actively engaged in experimental and other road work. The Association congratulated Mr. J. W. Milton who had completed 25 years in its service in January, 1955.

### Publicity

During the year *Road Tar* reached a peak-figure circulation of 5,900. Because of a closer integration of gas units within the area gas boards, it had been found possible to save considerably on the circulation and the present figure was 5,600. A survey was now being made of the assistant road engineers in the local authorities with a view to placing the journal in the hands of those who had special responsibilities for road construction and maintenance. Not only had the circulation been maintained, but its size had been increased, two of the four issues during the year having been of 28 pages and two of 32 pages.

The tar-spraying indicator, which had proved so popular seven years ago, had been completely revised to correspond with the new Road Note No. 1, and it had been issued in a more handy pocket size. While reprinting a further 1,000 Road Tar Manuals, the opportunity had been taken to amend two of the sections and to incorporate a new sub-section consisting of Road Note No. 14 on the prevention of wet weather damage to surface dressings.

### Liaison with other Organizations

The desire to make fuller use of the fundamental research which was being done by the Coal Tar Research Association, particularly on pitch, and which might have much value when applied to road tar, had led to the setting up of a Road Tar Research Liaison Panel. It consisted of representatives from the Road Research Laboratory, the Road Tar Research Committee, the Coal Tar Research Association and the B.R.T.A. Mr. G. H. Fuidge of the South Eastern Gas Board, a former Chairman of the appropriate C.R.T.A. panel, was the Chairman of this Liaison Panel. Its terms of reference were widely drawn; they were to consider matters of common interest to the Coal Tar Research Association, and the Road Tar Research Committee in relation to road tar and its use and to make recommendations to both bodies.

The contact which the B.R.T.A. had with the Department of Scientific and Industrial Research and with the Road Research Board had been strengthened by Mr. J. Davidson Pratt, the Chairman of the B.R.T.A., resuming his Chairmanship of the Road Tar Research Committee and his membership of the Pavings Committee, both of which appointments were interrupted while he was seconded for special duties with the Ministry of Supply.

### The Dinner

Among the guests at the dinner were the Chairman of the Gas Council, Sir Harold Smith, seven Chairmen and one Deputy-Chairman of area gas boards. The principal guest was the Minister of Transport.

Mr. H. J. CARTER, M.B.E., D.F.C., Honorary Treasurer (Joint Products Salesman, North Thames Gas Board), proposed the toast of the guests. He said they were delighted and honoured to have with them the Minister of Transport. Mr. Carter wished him 'God-speed' in his efforts to develop and improve the road system in this country. Incidentally, he added, to the surveyors present he would recommend a very good road-drill operator if they were short of labour. They were also happy to have with them representatives of the Ministries and Government departments with whom they were concerned and to whom they were indebted for dealing in a most sympathetic manner with their problems.

In welcoming their friends from overseas he was sorry to say that M. Rumpler (Directeur des Routes et Ministere de Travaux Publics, France), and M. Coret, Chairman of the International Road Tar Conference, were confined to their beds with influenza. Mr. Carter welcomed their surveyor and contractor friends and also the Press, who he hoped would continue to campaign for a better road system in this country.

Mr. J. BOYD-CARPENTER, M.P., Minister of Transport and Civil Aviation, responding to the toast, referred to Mr. Carter's mention of his somewhat unskilled efforts at road construction. He was bound to say that came very surprisingly from a distinguished member of the gas industry. After all, anyone who knew our streets knew the picture. They built the roads and along came the Gas Council to dig them up again. In that rather rarified sense Mr. Carter and himself could describe each other as fellow workers.

Mr. Boyd-Carpenter spoke of a remark made at his table that the Association lived between the devil and the deep sea, between the Coal Board and the Gas Council. He would say at once, however, that the allocation of rôles between those two distinguished bodies had not been precisely indicated to him. But the Association did work which was particularly valuable at the present time. As they knew they were launching out on a new substantial road programme. It was a moment, therefore, when it was particularly important that research into the various techniques and methods of road-making should be pressed on. Until recently road-making might have qualified as an academic subject in which honorary degrees could have been given, but now that it was becoming a practical science the value of research into technical methods and the use of materials had become of real and practical importance again. He thought that a lot of the Association's guests felt the significance of that evening's dinner.

It was a pleasure to pay tribute to the very great work the Association was doing in connection with what he might with proper impartiality describe as *one* road-making material. The fact was that they were at a stage at which it looked as if many of those materials were going to be required in much greater quantities than had been the case for 16 or 17 years. Physical work had actually been started on 240 schemes for trunk and classified roads—that was a beginning of a road programme, and he knew how great the demands were.

One of the things which had been borne on him in recent months was that until recently able young engineers were discouraged from going into road construction because it had not seemed to be a line of country in which people could do something worthwhile. That impression had to be corrected. While this country had lagged behind most other major countries it had now set out with one advantage gained—the practical

knowledge and experience derived from other people's experience—and sometimes mistakes. He exhorted the Association to help to make sure that the substantial but still limited sums of money being made available were used to the best advantage.

### Co-operation

MR. E. JOHN POWELL, Chairman of the Road Research Board, proposing the toast of the Association, said he was particularly pleased to propose it because it gave him the opportunity of acknowledging the friendly co-operation which had existed, and continued to exist, between the Association and its officers and the Road Research Laboratory, in all matters concerning the properties and use of road tar. The Association's co-operation with the laboratory, he said, began in 1932, and it was formalized in the Road Tar Research Committee under the able Chairmanship of Mr. Davidson Pratt, who was also a member of the Pavings Committee. Mr. Powell said it was a matter of satisfaction to the Association to know that this Committee was under the care of a person of such wide experience and dominant personality. It had been a happy and prolific union and the results had led to substantial advances in the knowledge of the value of road tar in modern road practice and also in the solution of the many fundamental problems affecting its suitability as a road-making material.

Their Association had fostered research and it had been not only willing but also eager to apply the results in practice. It had reached conclusions—not always favourable ones—and had at once set about making the necessary improvements or adopting the technique to utilize an apparent disadvantage with advantage.

The manner in which the Association was progressing was nowhere more clearly shown than in the case of surface dressing. This had suffered more than any other from 'the slings and arrows of outrageous fortune'; failures were far too frequent, and the whole business had been carried out with little understanding. Perhaps the cheapness of surface dressing was not altogether an advantage. There might still be in some hearts a tendency to regard it as something just to tide over merely because it was cheap. But the studies which had been carried out into the causes of unsatisfactory work had established the factors necessary to place this on a reliable basis. The control of the rate of spread had, of course, been greatly simplified by the introduction of mechanical distributors and the development of an easily applied wetting agent might prevent one of the causes of failure to newly sprayed surfaces. The emergence of economic results which came from the technique of surface dressing could hardly be over-emphasized when it was realised that about 20,000 miles of road were dressed with road tar last year, and that the average life was now 4½ years instead of one year.

Another classic example of successful development based on research was dense tar surfacing. The tendency to devote more attention to this material was caused not merely by the necessity of improving the durability of their surfaces in the light of the increased weight of traffic, but also because it was believed that this type of surface had a fundamental bearing on the performance of the road as a whole.

### Disseminating Knowledge

For their work in disseminating the skilled knowledge of their research, the Association deserved the highest possible praise. Mr. Powell thought the Association's journal, with a circulation approaching 6,000 copies, was bright and informative. It contained technical articles of practical value written by experienced men as well as a number of other articles in a most readable form. Their Road Tar Manual gave full information in a concise and readily accessible form and even the little tar spraying indicator was most suitable, enabling one to calculate the most correct preparations.

The service rendered through their technical department was of tremendous value to people like himself whose task it was to maintain too many roads with too little money. But the Association's helpful advice and readiness to assist was, he could assure them, greatly appreciated. In research and the development of techniques and the dissemination of knowledge, Mr. Powell thought the Association could well be proud of its record. The problem of satisfying the needs of the rapidly increasing transport, within a budget which increased so slowly that it did not keep pace with normal increases in costs, might continue to test the skill and energy of everyone concerned with making and maintaining roads. He thought they should only continue to be successful by close and continued association over the widest possible field in the matter of research.

MR. W. K. HUTCHISON, C.B.E., President, Chairman, South Eastern Gas Board and President of the Institution of Gas Engineers, responding, said that after two years as President he might say he was joining three past-presidents of great distinction, Sir Harold West, Sir Harold Smith, and Mr. Stanley Robinson, and it made him think that the preponderance of the knighthood must give some thought to the view that in this country success was distinguished by being knighted by the Queen, whereas in America it was distinguished by being indicted by Congress.

He was indeed proud to join such a distinguished party of past-presidents. As the Association had dusted him off and put him on the throne again for one more night he was approaching his task with some sense of irresponsibility. But before he would become too irresponsible he would like to thank Mr. Powell for the extremely kind and sensible things he had said about them. The Association felt that they had a place in what lay ahead. He thought that all of them believed in tar and that Mr. Powell believed in tar, too. Mr. Hutchison said it was with the greatest pleasure and sincerity that he carried out the simplest duty their President had to perform, which was to thank the members for their support and for the pleasure which they had given him in the office he had held. He might say that even the most awkward members eventually knelt and became his best friends. He would also mention with due humility the respect which they had for the whole-time officers of the British Road Tar Association. As Chairman of the Council, Mr. Davidson Pratt had given Mr. Hutchison a lot of his time, supported by Mr. MacCormack, Mr. Cone and all other officers and area representatives of this Association. He wished them all success in the future.

To Mr. Leslie O'Connor, his successor, he also wished success. Mr. O'Connor had sent his deepest regret at not being present that evening. He had a date of long standing. Mr. Hutchison was sure he would serve the Association extremely well.

Finally, said Mr. Hutchison, no meeting of the British Road Tar Association would be complete without reference to M. Cochery. It was his very great pleasure to lead the British delegation at the successful Vittel conference and that conference was undoubtedly linked with the name of M. Cochery. His hospitality had made that conference a truly international affair.

M. A. COCHERY, President of the International Road Tar Conference, replied.

Mr. J. DAVIDSON PRATT, C.B.E., Chairman of the Council, stood to pay tribute to two men. The first was M. Cochery, who had the initiative and the courage to undertake something never attempted before in France, with a plant not ideally suited for the job, with men who had never handled the material, laid it or made it before. This was to undertake a large demonstration length of D.T.S. on the roads of France. They had made a marvellous success of it. He hoped they would learn a lesson from that and that it would be a great stimulus to all of them to take up and apply the research and development work which came from Dr. Glanville and his colleagues at the Road Research Laboratory. His next words would be about their President, Mr. Hutchison. In case the Minister did not know this was a unique Association. The big lions of nationalised industries lay down quietly with the lambs of private enterprise. So far, the lions had shown no signs of eating the lambs. Perhaps they had not been hungry so far. But Mr. Hutchison, who was one of the lions, during his two years of office had been a great tower of strength and a great help to him as Chairman.

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**The title** of the Gas Division of Thomas De La Rue & Company, Limited, is being changed to the Potterton Division. The reason for the change is that the company, which for many years has been producing the well-known 'Potterton' gas-fired boilers, recently extended by introducing the 'Potterton' oil-fired boiler.

# the stars of today

. . . are created by public acclaim. Cinema audiences acclaim demure June Thorburn, who stars in the currently released film "Touch and Go"—and housewives acclaim the Century Cooker, which features in thousands of modern kitchens throughout the British Isles.

The roles of these two stars in contemporary life are in widely differing fields, but the pre-eminence of both is the result of their fulfilling the exacting demands of their respective roles.

## Star features of the Century

★ Vitreous enamelled surfaces throughout ★ Cream exterior ★ Removable double platerack ★ Used oven heat vented in front of backplate to heat platerack ★ Four fast-boiling hotplate burners with taps having fixed stop for simmering ★ Large quick-heating grill ★ Safety-type taps ★ Hotplate parts removable ★ Roomy oven, base suitable for slow cooking ★ Mainstat oven-heat control ★ Drop-type oven door ★ Oven lights from front by flash tube ★ Storage space in plinth ★ Hotplate side extensions and gas lighter supplied if required

R. & A. MAIN LIMITED
LONDON & FALKIRK

June Thorburn who stars with Jack Hawkins and Margaret Johnston in 'Touch and Go' (an Ealing Studios Production).

C.60

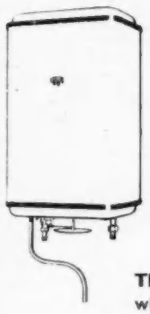
The MAIN No. 20

# CENTURY Cooker

Note the name-made by MAIN

C.60

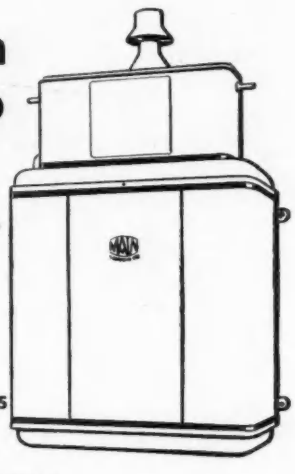
# constant hot water . . .



## for the sink or wash basin . . .

**The Thermain No. 2**
with 2 gallons capacity. Finished in cream or white enamel and with black decoration.

## or from any tap in the house..



**The Thermain No. 15 Mult point**
with 15 gallons capacity. Finished in white or cream enamel paint.

# from MAIN *storage* water heaters

*. . . There's one for every domestic purpose*

MAIN WATER HEATERS LTD.
Gothic Works, Thornton Road, Croydon, Surrey

W33

# Opening Ceremony at Bromley Extensions

★

**A technical description appeared in our issue of October 26.**

*Right: Official opening ceremony of the retort house (left to right, Mr. L. W. Joynson-Hicks, the deputy mayor of West Ham, Mr. R. G. Plummer, and Mr. Michael Milne-Watson, chairman of the North Thames Gas Board).*

*Below: Left to right, Mr. Michael Milne-Watson, Mr. L. W. Joynson-Hicks, and Mr. W. K. Hutchison, chairman of the South Eastern Gas Board, a guest at the ceremony.*

*Below, left: Speeding up the turbine of the gas pump in the new pump house. Left to right: Dr. J. Burns, Mr. G. Everett, foreman fitter, Mr. V. M. L. West, mechanical engineer, Bromley, Mr. L. W. Joynson-Hicks, Mr. Michael Milne-Watson, and Mr. R. G. Plummer.*

*Below right: Mr. L. W. Joynson-Hicks and Mr. R. G. Plummer.*

*Right: Mr. L. W. Joynson-Hicks 'charges' one of the retorts in the new retort house—in the background is Mr. E. G. Tuff, the retort house foreman.*

*Centre: Mr. L. W. Joynson-Hicks, Mr. R. G. Plummer (station engineer, Bromley) and the deputy mayor of West Ham (Councillor H. R. Nicholls, J.P.) inspecting a combustion chamber in the boiler house.*

*Lower, left: Mr. L. W. Joynson-Hicks with members of the works committee (left to right: Messrs. C. A. Goodwin, C. E. Jobbins, L. Joy, J. Merton, C. McGilvray, J. A. Mousley, C. I. E. Murton, and G. A. Noons).*

*Lower, right: Left to right: Dr. J. Burns, chief engineer, North Thames Gas Board, Mr. Michael Milne-Watson, and Mr. L. W. Joynson-Hicks.*

# Midland Juniors New Session

The opening meeting of the 1955-56 session of the Midland Junior Gas Association was held in Birmingham on Tuesday, October 11. Mr. S. C. Crathorn (Birmingham) was inducted into office by Mr. H. J. Reynolds, who then resumed his former office of Hon. Secretary of the Association.

Mr. Reynolds presented the 1954 S.B.G.I. medal to Mr. A. E. Mason (Birmingham) and congratulated him on his success, which he hoped would be incentive to other members to give papers. He then said that he had now come to the end of his year of office and that he desired to reiterate his thanks for his election during so momentous a year as the Jubilee Year and for the very excellent support which had invariably been accorded to him. He thought they would agree that the 50th year had been a very successful one. Mr. Reynolds then inducted Mr. Crathorn to the office of President and said he was so well known to all of them that he needed no introduction. He had been a member of the Association for a great many years and was a most enthusiastic worker on the council.

Mr. Crathorn thanked members for their support and proposing a vote of thanks to Mr. Reynolds said he had carried out onerous duties with great ability. He had accomplished his tasks with his usual good humour, and there was laughter as the speaker added—'with a somewhat unexpected dignity.' They were grateful for what he had done for the Association, and he, Mr. Crathorn, had much pleasure in presenting him with the Past President's Medal.

Mr. Reynolds in reply paid tribute to the support and encouragement which had been received from the Chairmen of the East and West Midlands Gas Boards.

After Mr. Crathorn had delivered his Presidential Address, Mr. S. K. Hawthorn (Birmingham), proposing a vote of thanks to the President for his address, said Mr. Crathorn was a very sound, thoughtful and hard working member of his staff whom he had known throughout his career in the gas industry. He was very proud that the council had selected him for the presidency this year. He was sure that Mr. Crathorn would do all that was expected of him; he would work hard himself and would also work the Association hard in order to make the session a successful one. The very comprehensive address which Mr. Crathorn had given had obviously taken a great deal of preparation, covering as it did all aspects of the gas industry, such as works practice, distribution, utilization, sales and service, costs, capital expenditure, industrial relations and work study. It was obvious that the new President was no specialist.

He had pointed out the difficulties the gas industry was up against and the opportunities before it; he had also attempted to show what developments had been made over the past few years and the developments that were still taking place. If one went further back, however, say 30 years, the one major trend had been the replacement of horizontal and inclined retorts by the continuous vertical type, and this, with the exception of the development of water gas plants, had been the only important alteration in method between the wars when there had been no shortage of coal. When one reviewed the last five or six years, however, it was staggering to realize how many new processes were being explored, such as gas from oil by the catalytic and thermal cracking processes; the use of heavy oil for water gas; the recovery of methane from mines, and the distribution of butane/air and petrol/air mixtures, and last of all, but by no means least, the search for natural gas. In this last field they must all welcome the bold policy of the Gas Council, which might revolutionize the whole gas industry in this country as it had done in Italy and the United States. Surely all these developments indicated a strong and virile industry. Mr. Crathorn had even mentioned atomic power, but he himself thought a word of caution might not be out of place on this subject. There was a tendency to believe that this process would take over power production within a few years, but he would like to point out that the country was crying out each year for more and more fuel and power, which could not be provided from coal, and some other source had to be found to meet the increased demands. That was where atomic power came in, it would make up the deficiencies of coal, which fuel, however, would still be required for many years to come. A long paragraph of the address had been devoted to coke, and the President had mentioned the Beaver Report and the Government's plans to clean up the air over the cities. This situation provided a wonderful opportunity for the gas industry, but it must be in a position to supply coke up to requirements, and in this direction it was pleasing to note a slight improvement in the quality of the coal in the last two years. This was helpful in producing better coke, but there was still trouble with the concentration of ash in the small sizes, and the only answer there seemed to be in providing coke washing plants. Reference had been made to the release of coke by making other arrangements in retort working, such as the introduction of producer gas from coal, but one of the difficulties here was the probable need for gas cleaning and reheating before use. It should be possible to release some domestic coke by the use of small sizes of coke in the producers themselves.

The author had stressed the need for proper stacking and reclaiming arrangements for coke, and here was a problem which must be tackled. Many works endeavoured to carry on with small stocks of coke, and in times of heavy demand customers might be forced to wait five or six weeks for delivery, and that was a very unsatisfactory situation.

In conclusion, Mr. Hawthorn emphasized the value of the Junior Associations in providing means for giving and discussing papers, and he reiterated a previous suggestion that consideration be given to the circulation of papers before the actual meeting to give members an opportunity of studying them and so encourage the younger members to contribute to the discussions.

## GEORGE WILSON ENTERTAINS THE LADIES

*George Wilson Gas Meters Ltd., have recently been hosts to a branch of the Townswomen's Guild and also to parties of members of the Coventry branch of the Women's Gas Federation, of which Mrs. D. K. Green, wife of the Senior Engineer in charge of the Coventry District, is the Chairman. This photograph shows a party from the Women's Gas Federation inspecting a special meter. From left to right:—Mr. J. E. Pashler (Assistant to Managing Director), Mrs. Wale, Mrs. G. Christian (Deputy Chairman), Mr. D. C. E. Poole (Technical Director), Mrs. L. Bacon (Treasurer), Mrs. E. Reed (Social Secretary), Mrs. Cotton and Mr. W. D. Wilson (Chairman, George Wilson Meters, Ltd.).*

*This photograph shows Lady Isobel Barnett (right) who later presented the prizes, with the winner, Mrs. Audrey Joan Marland, of Bowden, Cheshire.*

## 'BRIDE OF THE YEAR'—NORTH WEST

Eight young brides competed in the Free Trade Hall, Manchester, on October 11 for the honour of representing the North West in the London finals of the gas industry's national 'Bride of the Year' competition. Some 480 brides entered for the competition organized by the North Western Gas Board, and the one whose charm, personality and skill in the arts of cooking and housecraft won the day was Mrs. Audrey Joan Marland, of Bowden, Cheshire.

The other finalists at Manchester were: Mrs. Maureen A. Hall, of West Didsbury, Manchester, who came second; Mrs. Joan Atkinson, of Burnley, who was third; and Mrs. Phyllis Whitehead, Preston, Mrs. Margaret M. Maguire, St. Helens, Mrs. Edna Banks, Heswall, Mrs. Barbara A. Owens, Liverpool, and Mrs. Ursula L. Ashley, Northwich.

Lady Barnett presented the prizes, and the judges were: Miss A. Wright, Organizer for Domestic Subjects for Manchester Education Committe; Miss E. L. Meystre, Head of the Domestic Studies Department of the Royal Technical College, Salford; and Mr. Norman Davis, head of the Hotel and Catering Department at the Domestic and Trades College, Manchester.

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**Astral Equipment, Ltd.,** announce that their Glasgow office closed on October 28, 1955. All correspondence other than that in connection with service matters, should be addressed to Astral Equipment, Ltd., Industrial Estate, Kingsway, Dundee. Tel. No. Dundee 85201. Correspondence in connection with service matters should in future be addressed to Morphy-Richards, Ltd., Astral Service Department, St. Mary Cray, Kent. Tel. No. Orpington 27501.

## Changes in Valuation of Gasworks

Important changes in the method of valuing gasworks in Scotland for rating purposes are suggested in the report of a working party set up by the Secretary of State for Scotland following a recommendation of the Sorn Committee. The party comprised local authority officials, the Assessor of Public Undertakings (Scotland), officials of the Government Departments concerned and representatives of the Scottish Gas Board.

They suggest a new method of valuation based on the new scheme for valuing gas boards in England and Wales. Under this proposal a basic valuation would be calculated on the revenue principle, which seeks to establish what a hypothetical tenant would be prepared to pay for an undertaking by calculations based on its accounts suitably modified, for all the gasworks in Scotland taken together. This valuation would then be varied from year to year in accordance with the Board's output of gas. The total valuation so arrived at would be distributed between Scottish rating authorities on a formula related to the gas manufactured and consumed in each area.

As a less satisfactory alternative to the adoption of such a new method of valuation the working party suggest modifications of the existing revenue principle which would help to remove anomalies. As an interim measure the working party say that if valuations generally are 'frozen' for five years (as a result of a Bill based on the Sorn Report) then the Gas Board's valuation should be 'frozen' also. Commenting on these recommendations the working party say that the Scottish Board have established their case that some modification of the present method of valuing their undertaking is essential to their financial stability during the next few years.

## Funds for Fuel Research

Donations totalling £57,050 have been received by the University of Leeds in response to an appeal for funds for development of the Department of Fuel Science and Chemical Engineering. Among subscribers are the following: The Gas Council, £27,000; Radiation Ltd., £10,000; Woodall-Duckham Construction Co., Ltd., £10,000; E. Green and Co., Ltd., Wakefield, £5,000; Power Gas Corporation, £2,000; British Coking Industry Association, £1,050; W. J. Jenkins and Co., £1,000; Whessoe, Ltd., £1,000; W. C. Holmes and Co., Ltd., £1,000; Simon-Carves, Ltd., £500; and Yorkshire Tar Distillers, £500. It was stated that at no period in its history had the university so much new building work in progress as at present. The cost of work already started is about £1½mill. Among the many gifts and grants to various departments, either received or promised was £450 for 1955 to 1956 from the British Coke Research Association for a Fellowship.

## Boosting Gas

At a Press conference at Newcastle-on-Tyne, Mr. E. Crowther, chairman of the Northern Gas Board, referred to an experimental scheme tried out at Gateshead gasworks for boosting peak gas loads by injecting a gas made of a petrol-air mixture and blended with larger gas streams. Mr. Crowther said it was intended to extend this method to other major producing units. Other area gas boards were interested in the scheme. Mr. Crowther stated that gas produced in this manner cost 1s. a therm, but the petrol duty sent the cost up to 3s. compared with 10d. a therm for conventionally-produced gas. The Board was seeking a return of the petrol duty.

## Smoke Abatement Conference

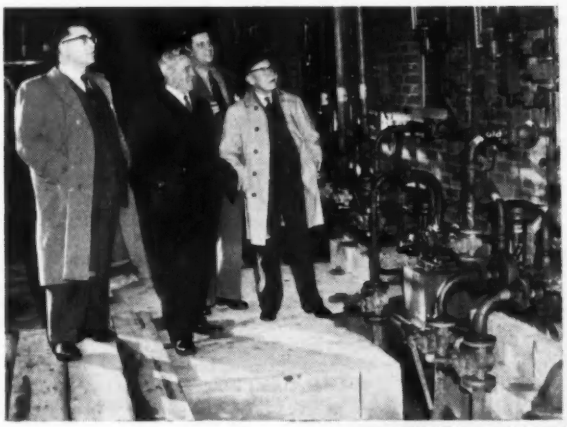
A criticism of the Gas Board was voiced by Miss I. M. Richmond, Glasgow, of the Women's Advisory Council on Solid Fuel, when she spoke at the annual conference of the Scottish Division of the Smoke Abatement Society, held in Ayr on October 20 to 21. Housewives, she said, must be encouraged to buy the new modern fires and smokeless fuel—but asked what encouragement there was when the Gas Board charged £6 13s. a ton for coke. She accused the Board of charging more for the coke than it cost after extracting the gas.

Other delegates expressed the view that if the Clean Air Bill did receive assent many amendments would be required to be made to it. Bailie W. Taylor, Kirkcaldy, said the Bill did not make provision for the prevention of fumes from diesel road traffic. He was perturbed about this, for, he said, 'our highways are just funnels of smoke.'

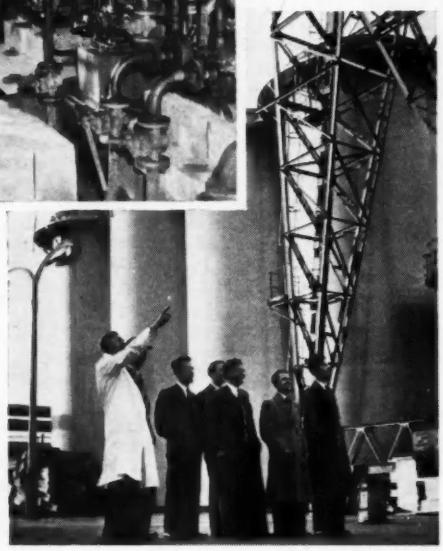
Sir Patrick Dollan, chairman of the Scottish Committee of the National Industrial Fuel Efficiency Service, said that the most important clause in the new Bill was that which would unify English and Scottish law—which was long overdue. He did not see any prospect of Scotland getting adequate supplies of smokeless fuel for the next ten years, or that in the same period any adequate source of power would be available from nuclear stations. 'We will have to use every ounce of fuel energy available, whether a solid smokeless fuel, oil, gas, or electricity, if we are to get this country through in the next ten years,' he said.

Sir Patrick thought that the Scottish gas industry would have had to shut down half their plant this winter but for supplies of fuel from England. They could not supply enough high-quality coking coal in Scotland for the gas industry.

# MANCHESTER DISTRICT JUNIOR GAS ASSOCIATION VISIT TO DENTON



*Left (left to right): Mr. W. H. B. Porter, Mr. J. Grayston, North Cheshire Group; Mr. A. H. Nicholson, general manager, East Lancashire Group, and Dr. C. J. T. Cronshaw.*



*Right: Members of the Manchester District Junior Association of Gas Engineers celebrated their President's Day by a visit to the Denton Works of the North Western Gas Board followed by a dinner at Hyde Town Hall where their new President, Mr. H. Partington, Distribution Engineer of the Board's North Cheshire Group, was invested. Here are a few Association members being shown round Denton.*

## GAS CONSULTATIVE COUNCILS

### Visit to Collier, m.v. 'Croydon'

By invitation of the South Eastern Gas Board, a party, consisting of the chairman, Mr. A. B. Constable, M.A., B.SC., the deputy chairman, Mrs. H. S. Mair, M.A., and 14 members of the South Eastern Gas Consultative Council, paid a visit to the Board's latest collier, m.v. 'Croydon,' on October 5, 1955. The party were received on board by the ship's Master, Captain N. Carr, at West India Dock Buoys from where the 'Croydon' proceeded to Wandsworth Works, passing under 17 Thames bridges.

At Wandsworth the visitors were received by Mr. A. G. Gostelow, the Board's shipping manager, when a tribute was paid by the Chairman of the Council to the courtesy and hospitality shown by the Captain and Officers of the collier. Mr. Constable, in expressing thanks to the Board, said that the voyage had been not only pleasurable but most instructive and illustrated to the Consultative Council the important and efficient part played by the shipping department and its vital link in the Board's general organization. Mr. Gostelow said he was happy to have been of service to members of the Consultative Council and the pleasant task of their reception had in no way interfered with the ship's normal routine.

#### Scotland: New Gasholder

A new gasholder with a capacity of 750,000 cu.ft. is to be built for the Buckhaven and Leven district. The project was approved at a meeting of the Scottish Gas Consultative Council in Edinburgh, but so far no date has been fixed for a start on the work. Costs in connection with the project have increased to £9,435.

#### South West: Committee Chairman

Mr. W. F. Hender, of Launceston, a member of the South Western Gas Consultative Council, was unanimously elected chairman of the local committee for the Plymouth and Bude districts, at a recent meeting of the committee in Plymouth. He succeeds Mrs. L. Newbery.

### Western Juniors Visit Torquay

A fine day at Torquay provided a fitting start to a new Session for the Western Junior Gas Association. In the morning some sixty members visited the Hollacombe Works, where they were able to see the reconstructed portion of the Glover West carbonizing plant, and the newly installed diesel driven compressor, which will be used to pump gas into the high pressure system, now connected through to Exeter in the east and to Totnes and Dartmouth Districts in the west.

#### Presidential Meeting

In the afternoon over seventy members assembled in the Demonstration Room, Union Street, where Mr. F. G. Craxford handed over his office of President to the incoming President, Mr. D. J. Maunder. In thanking the members for their confidence in electing him to office, Mr. Maunder stated that the virility and success of an Association such as the Juniors depended on the support of each individual member, and he appealed to members to attend as many meetings as possible, to keep the meetings alive and vigorous.

Mr. R. G. Barlett (Mains & Services Supt., Exeter) then presented his paper entitled 'Planned Safety and Distribution Practice,' a paper which dealt with all the diverse forms of safety practice necessary to avoid accidents and fatalities. In opening the discussion on the paper, Mr. J. W. Denton (Torquay) said he thought it wise to emphasize the need for safety practice to be planned and thus become normal routine for all employees. No distribution engineer or other supervisor would wish to feel that an accident had occurred because he or somebody had omitted to take a message correctly, to send someone immediately or fail to supervise the operation correctly. The paper had also stressed the need for mainlaying work to be properly supervised, and carried out by reputable contractors.

#### Need for Safety

In proposing a vote of thanks to the author of the paper Mr. R. Pratt said that he had just read a report on an explosion at a gasworks which had been caused by the lack of planned safety. He thought the paper was very opportune in underlining the need for safety measures in all our operations. At the close of the meeting, the President, Mr. Maunder, made a presentation of a silver tankard to Mr. F. G. Craxford the retiring President. Mr. Maunder referred to the successful year the Association had enjoyed under Mr. Craxford's Presidency, and to the fact that Mr. Craxford had been the first President to wear the chain of office presented to the Association by Mr. C. H. Chester, the Area Board Chairman.

In reply, Mr. Craxford said how very pleased he had been to have had the honour of Presidential office, and he was also very pleased to have been given a tankard exactly similar to those presented to retiring Presidents before the war.

# London and Southern I.G.E.

## 5th Annual General Meeting

At the commencement of the Institute's 5th Annual General Meeting of the London and Southern Section of Gas Engineers Mr. E. O. Rose, the out-going Chairman formally asked Mr. J. M. Webber the new Chairman to take up his duties. The first of these was the presentation to Mr. Rose of a pair of field glasses commenting on the appropriate nature of this gift since 'Tottenham was noted for taking the long view.' Mr. Rose thanked members and wished Mr. Webber a very successful year.

Mr. Webber then introduced Mr. H. F. H. Jones, Senior Vice-President of the Institution of Gas Engineers, who was representing the President, Mr. W. K. Hutchison. Mr. Jones expressed the pleasure it gave him to be present, particularly as it enabled a close contact to be maintained between the Council of the Institution and the District Sections whose work played such a large part in the life of the parent Institution. He had noted the wide sphere of interest embraced by the London and Southern Section and the high standard of its papers. This work and the good fellowship in the Sections served to encourage younger men in the Industry and the senior personnel could do much in the guidance of juniors in their training and education to ensure the standard required by the Industry.

The very generous support by the Section of the Institution's Benevolent Fund was sincerely appreciated by the Council and it helped materially to alleviate the many instances of real hardship.

### Gas Council's Report

Mr. Jones then dealt briefly with the major points in the Gas Council's report for the year ended March, 1955, and instanced the measures still being actively pursued concerning alternative means of providing gas supplies. Studies on oil gasification proceeded, liquid methane was still under investigation and compared with the experience of other countries it was still too early to assess the probable results of the search for natural gas.

Mr. Jones was looking forward to hearing Mr. Copp's paper and he wished Mr. Webber and the Section a very successful year. In thanking Mr. Jones for his remarks Mr. Webber expressed the pleasure of members at the interest taken in the Section by him and by the President and Council of the Institution.

Submitting the 5th Annual Report and Statement of Accounts for the Session 1954-55 the Chairman drew attention to the continued success of the Annual Spring Meeting Luncheon. This function was the most important of the year's activities when they were able to meet and entertain many eminent friends of the Section, and it was hoped that many more members would attend next year. With regard to membership of the Section it was felt that its work and opportunities for meeting colleagues was of value to people in all branches of the industry, production, distribution and sales, and he suggested that members might encourage others to seek election. Mr. G. Dougill, proposing the adoption of the report which was seconded by Mr. W. Morland Fox, noted that it reflected another highly successful year. Mr. J. M. Webber was nominated as Chairman, Mr. G. Dougill as Senior Vice-Chairman and Mr. C. Stott as Junior Vice-Chairman. The Management Committee's nominees to the general committee:—Mr. P. Valon Bennett, Mr. J. W. Townsend and Mr. D. C. Bertram were approved. Mr. H. A. Probin and Mr. C. J. B. Sawbridge had agreed to again serve as Honorary Auditors.

New members elected were Mr. T. W. Austen, Mr. L. S. Francis, Mr. F. Broomhead and Mr. L. W. Blundell.

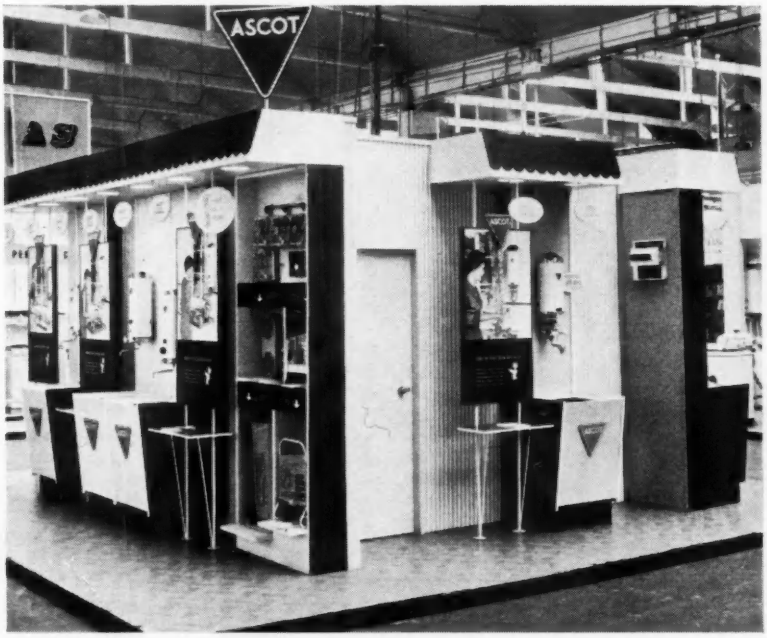
At the conclusion of the business meeting a very practical paper entitled 'Some New Aspects of Distribution Technique,' read by Mr. A. D. L. Copp, distributing engineer, of the North Thames Gas Board, which provoked an interesting discussion. The paper is printed on page 321 of this issue.

# Census of Production for 1955

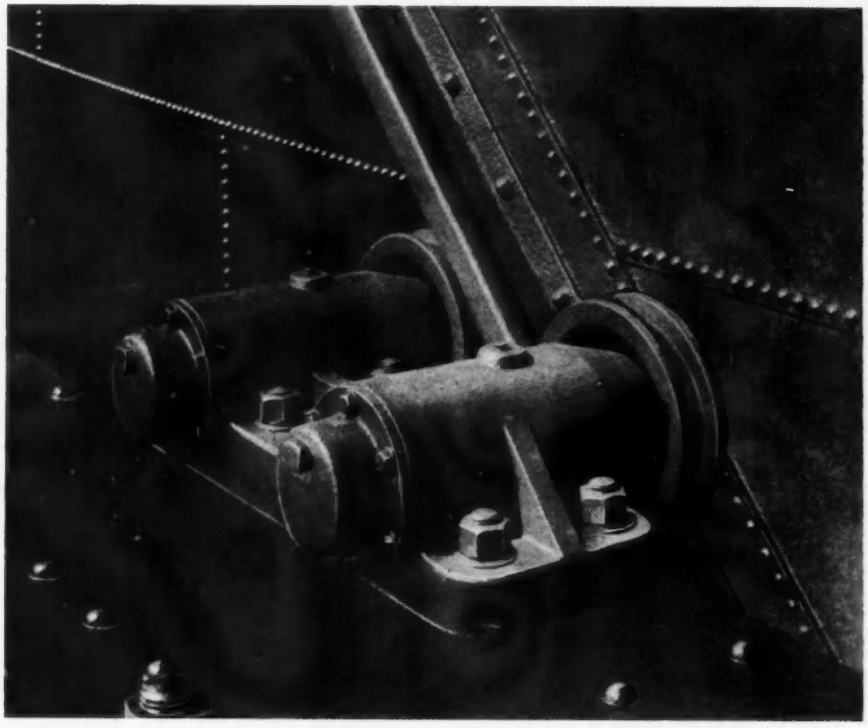
As already announced, the Census of Production to be taken in 1956 in respect of the year 1955 will be a simplified census on a sample basis, similar to the censuses for 1952 and 1953. An order prescribing the matters about which returns may be required has now been made by the Board of Trade. Undertakings producing coal, gas, electricity, oil-shale, crude or refined petroleum or shale oil products are exempted from making Census of Production returns to the extent to which they supply the necessary information to the Minister of Fuel and Power (or in certain cases to the Secretary of State for Scotland). The order, which operates from December 31, 1955, is the Census of Production (1956) (Returns and Exempted Persons) Order, 1955 (S.I. 1955 No. 1592). Copies may be obtained from H.M.S., Kingsway, London, W.C.2, and branches, or through any bookseller (price 2d., by post 3½d.).

Since the arrangements for the 1955 Census were announced in November, 1954, one important modification has been made to the sampling scheme. Firms engaged in mining and manufacturing that employed ten or fewer persons will not now be required to make returns. The number of forms to be issued will in consequence be reduced by more than 5,000.

# ASCOT AT MODERN HOMES EXHIBITION




*A general view of the Ascot, Ltd., stand at the Modern Homes Exhibition which was held at the Kelvin Hall, Glasgow, from October 5 to 22. On the other side of the stand was a small 'bar' at which free cups of tea were dispensed—the stand thereby proving to be most popular!*



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**Pattern B2183 Hot Brass Stamping Furnace**

Another British "ALCOSA" product, this furnace is acknowledged to be one of the most efficient obtainable to-day. Its special features include double-deck design and heat resisting iron lining, backed with best quality insulating bricks. Made in five sizes to suit all modern press sizes. These Furnaces are universally used both at home and abroad, and are normally supplied complete with fan units to supply the necessary air blast. Single deck designs also available, Pattern B 2233.

**A.H.WILKES & CO.**

A SUBSIDIARY OF WILLIAM ALLDAY & CO., LTD.

ALCOSA WORKS, STOURPORT-ON-SEVERN, WORCS.
*Tel: Stourport 311-4* *Grams: YADALL, Stourport.*

## First Bakery Scholarship Awarded

The Cardiff Undertaking of the Wales Gas Board recently decided to award a scholarship to the value of 25 guineas to be made available to the student who, in the opinion of the principal and head of the Department of Bakery and Confectionery attached to the College of Technology and Commerce, Cardiff, showed most promise in his first year. The

*Mr. K. Parker, winner of a scholarship worth 25 guineas awarded for the first time by the Cardiff Undertaking of the Wales Gas Board*

first holder of this scholarship is Mr. K. Parker of Glamorgan who is 20 years of age. Mr. Parker became extremely interested in the baking trade while doing his National Service and being extremely ambitious he successfully applied as a student.

The principal of this school, Mr. Leslie Smith, expressed himself as being very impressed with Mr. Parker's ability and the decision to award him the prize was unanimous.

## R.A.F. Boy Cooks

Police moved the crowds on at Nottingham when six R.A.F. boy trainee cooks demonstrated service menus, new style. The East Midlands Gas Board co-operated very successfully with the R.A.F. in a joint effort which helped both the Service's recruiting drive and the Board's cooker campaign.

Preparation of food took place actually in the windows of the Nottingham showrooms, and crowds stopped to watch. Demonstrations then followed in the afternoon, the boys doing the cooking under the supervision of Sergeant Shanahan, who provided a witty and pointed running commentary.

**Fuel Efficiency Exhibition,** Manchester. In our report on October 19, p. 210, we referred to a '10 B.H.P.' engine by Ashworth & Parker Ltd. This should have read '100 B.H.P.'

# *News in Brief*

**Wallsend Corporation** has approved plans for a gasholder at the Howdon works of the Northern Gas Board.

**Elcontrol Ltd.,** manufacturers of industrial electronic controls, are moving into a new larger factory adjacent to their present premises at Hitchin. The newly-built factory will give Elcontrol nearly three times as much floor space.

**Mr. R. A. Butler,** the Chancellor of the Exchequer, is to open the British Industries Fair at Olympia on April 23. This B.I.F. will be the second held in London in 1956. The first, at Earls Court, will be opened by Lady Eden, wife of the Premier, on February 22.

**Foxboro-Yoxall, Ltd.,** have acquired a 55 acre site at Redhill, Surrey, where work will shortly start on the erection of a new factory. The new factory will provide, initially, a floor space of 120,000 sq. ft. with facilities for subsequent further expansion.

**Crieff (Perthshire)** gasworks, which have supplied the burgh with gas since 1843, are to close down as soon as pipes can be laid to take a direct supply from Perth. The staff of nine will be given work with the service department in the district.

**Radiation, Ltd.,** announce an interim dividend in respect of the year ending December 31, 1955, on the ordinary stock, as increased by the bonus issue on June 24, 1955, at the rate of 2½% actual, less income tax, and to pay the half-yearly dividend on the preference stock. Warrants for both dividends will be posted on October 31, 1955.

**Mr. H. J. Reynolds,** of the Gasworks, Wolverhampton, for many years honorary secretary of the Midland Junior Gas Association and president in the Jubilee year of 1954/55, was on October 10 inducted into the chair of the Wolverhampton and District Engineering Society. Mr. G. le B. Diamond (chairman of the West Midlands Gas Board) was present and gave an address.

**Bangor** (Co. Down) Borough Council having studied a report on behalf of the Northern Ireland Gas Employers Board on the manufacture of gas from oil at York, Stafford and Solihull and of Butane/Air Gas at Bugany decided to take no action as the use of oil to supplement gas manufactured from coal would have the effect of increasing the price of gas to consumers in Bangor.

**Proposals** for a smokeless zone in the Sighthill area of Edinburgh are before the local Corporation. It is recommended that the first phase, extending to approximately 250 acres, comprising the Sighthill industrial estate and adjoining recreational ground, should be established as a smokeless zone. The second phase extends to approximately 125 acres, in which there are 1,002 Corporation-owned houses in which there are 2,166 fireplaces. Of these 1,307 would have to be replaced or adapted at a cost of about £18,000 if the area becomes a smokeless zone.

**An agreement** in 1939 between Middlesbrough Corporation and Dorman Long and Co. Ltd., whereby the latter supplied coke-oven gas to Middlesbrough, ends this year. A new agreement has now been entered into between the firm and the Northern Gas Board which is now responsible for supplies formerly carried out by Middlesbrough gas undertaking.

**Fire broke out** recently on a Tavistock (Devon) gasholder containing 48,000 cu.ft. of gas. The main gas-making chamber was flooded. Gas is believed to have been leaking slightly from the water seal when the foreman and fitter started drilling for repairs to the holder. Water was hosed on the flames until firemen arrived with foam extinguishers. About 13,000 cu.ft. of gas are estimated to have been lost in the fire.

**The Scottish Gas Board** have rejected an approach by Hamilton Town Council for a special price concession for street lighting charges in view of their special position as large public consumers. The Board, in discussions which took place, said they would be prepared to consider the request if the Council could guarantee a yearly minimum consumption of 15 mill. cu.ft. The Council expect consumption to be 13 mill. cu.ft. this year, with a drop to 10 next year. The Board say that, in view of that position, they cannot see their way to give any special price concession.

**Following complaints** by the Northern Gas Board, Consett (Durham) Urban Council has agreed to the provision of additional gas points in 40 houses being built at Delves Lane, Consett. The Board said that although it had spent £10,000 on developments in the Consett area, the Council proposed installing only one gas point in each house. The Board pointed out that gas charges at Consett had been reduced by one penny a therm, and that if the Council provided two points in each house the Board would provide a third, free of cost. The offer was accepted.

**At a Coleshill** inquest on October 10, the coroner, Mr. C. W. Iliffe, recorded a verdict of misadventure on Gwenifer Joyce Evans, who died from carbon monoxide poisoning due to faulty combustion in a gas fire. The gas fire was full on and there was a strong smell. Mr. A. R. Bates, technical officer, West Midland Gas Board, said there was no question of gas escaping or an explosion. There was a small air brick for ventilation above one of the two doors. The element in the portable gas fire in the kitchen, was damaged and slightly distorted, and the structure of the flames was being interfered with by contact with this damaged element. Incomplete combustion of the gas resulted and carbon monoxide was being produced.

# TRADE NEWS

## Stockpiling of coal at coke ovens

The efficient handling of coal stocks and the need to maintain a large stockpile against probable supply difficulties arising from an emergency, calls for careful planning in the utilization of space and the choice of coal moving equipment. When stockpiling involves constant movement over the whole stack area, reliable, specially designed equipment capable of sustained effort is obviously required.

At the Cleveland Coke Ovens of Dorman Long (Steel), Ltd., South Bank, Middlesbrough, pitch-adjustable 'U' blade hydraulic bulldozers, fitted to diesel crawler tractors, have been used. The coal supply difficulties arising from the recent railway strike brought into action the planned emergency resources at this site which had first been formulated some years ago.

A large emergency reserve stock of coal is carried rising to a height of approximately 15 ft. and during the strike large quantities of this stock were used while at the same time fresh supplies of road-borne coal were dumped and added to the heap. This coal movement was carried out by bulldozers which included three Challenger, diesel crawler type tractors, equipped with Bray hydraulic 'U' blade bulldozers and all-weather steel cabs and which successfully maintained a supply of coal to the ground hoppers feeding the underground belt for the conveyor feeding the coke oven bunkers. The coal handled per day was 2,000 to 3,000 tons. During the rail strike, with its resultant dwindling of coal supplies, the bulldozers worked fourteen hours a day, without any loss of efficiency.

The 'U' blade of the bulldozer is claimed to obviate the spillage from the blade ends which would occur with a straight blade. The rolling action of the blade is shown in the illustration. The curve of this specially designed blade is the one best suited to the 'dozing' of small coals. The 'rolling' of the coal obviously requires less effort than the straight push which causes build-up of the load and attendant friction over large areas. The Challenger 3's are specially fitted with engine side covers which completely prevent ingress of any coal dust. —*John Fowler & Co. (Leeds), Ltd., Hunslet, Leeds, 10.*

*The 'U' blade of the Bray hydraulic bulldozer 'rolls' the coal.*

## Electronic governor

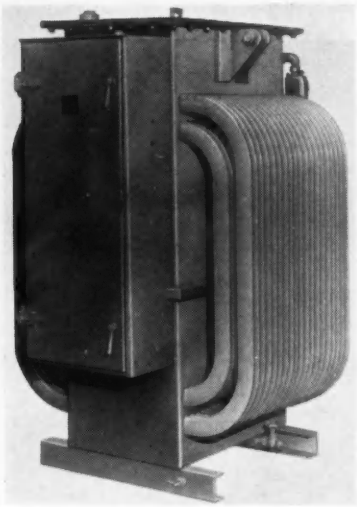
The Bryan Donkin electronic retort house governor has been developed in response to a demand for a sensitive and quick acting instrument which would regulate the flow of gas in direct proportion to the pressure of that gas. Up till now these units have been supplied for controlling the flow of coal gas from the retort to the exhauster, but, the manufacturers say, there are many other applications for which the unit could be adapted.

The unit, it is claimed, can control the pressure in the system to plus or minus 1/200 in. water gauge (plus or minus 0.000175 lb. per sq. in.), and will effect the corrections not only accurately but quickly, a deviation of 0.2 in. water gauge taking less than 10 seconds to correct.

The governor can be divided into three parts—the sensing, amplification and control units. The sensing unit controls the output of a high-frequency supply by means of a sensitive pressure cell. This current is amplified electronically, controlling the speed and direction of a motor which operates the butterfly valve through gears.—*C.J.R. Electrical and Electronic Development, Ltd., Witton, Birmingham, 6.*

## Selenium rectifiers for cathodic protection

The Hackbridge and Hewittic Electric Co. is now supplying metal plate rectifiers for the cathodic protection of buried metal structures. The equipments are built according to a basic constructional design, but the rating and general electrical design are arranged to suit individual requirements. Voltage control is



*Hackbridge and Hewittic rectifier.*

provided either by transformer tapping switches or by a voltage regulating transformer.

The rectifier illustrated is a typical unit for providing a D.C. supply of up to 80 amps. 6-60 volts at an ambient temperature of up to 55°C. It is for the cathodic protection of an oil pipe line in the Middle East.

The rectifier stacks and regulating transformer are oil immersed in a weatherproof tank for outdoor service, and the operating handwheel for the regulating transformer together with the measuring instruments and terminals are enclosed in a lockable box to prevent unauthorized interference.—*Hackbridge and Hewittic Electric Co., Ltd., Walton-on-Thames.*

## Bitumen sealer

Allweather Paints, Ltd., have recently introduced a new product which has been specially designed for use where the maintenance engineer requires to brighten his works but is unable, for a variety of reasons, to effect complete removal of bitumen present on surfaces treated with this type of material.

The problem is claimed to be solved by the use of Pitan Bitumen Sealer which is said to act as a very successful barrier and to prevent unsightly 'bitumen bleed.' The sealer gives a coverage of 60 to 70 sq. yds. per gal. It is supplied only in white, and the manufacturers recommend the application of one or two coats. It can be overpainted with any decorative and/or protective finish. — *Allweather Paints, Ltd., 36, Great Queen Street, W.C.2.*

### Miniature Heater

A miniature industrial overhead radiant heater has been designed for the heating of shops, the smaller commercial and industrial premises, offices, and restaurants. Occupying no floor space and suspended close to the ceiling it requires only normal room height and gives widely distributed radiation. Operating at an efficiency of 90%, one heater is usually considered sufficient for 1,500 cu.ft. The heat input is 7,500 B.Th.U. per hour, or 15 cu.ft. per hour.

The Miniature embodies a stack of ring radiants of new design which develop a red glow. The black vitreous enamel deflectors shed the heat downwards to prevent hot spots and ceiling discolouration. It is a complete assembly in a pressed steel frame finished in cream acid-resisting stoved enamel. The gas is turned on and off by a single lever arm.—*Bratt Colbran, Ltd., 10, Mortimer Street, London, W.1.*

### Flow indication

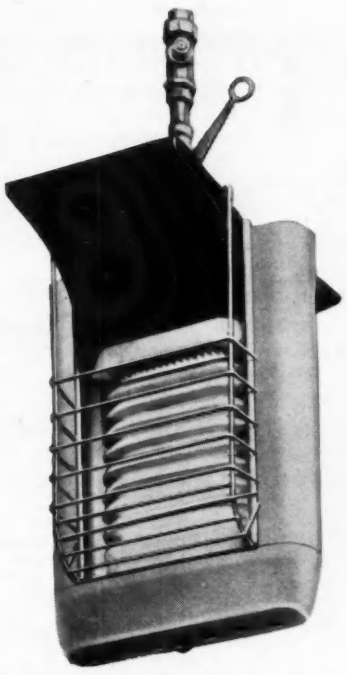
Measurement Ltd. claim that there is an ever-increasing demand for their 'Shoflo' indicators, and that they are being used extensively in oil refineries, gas and coke works, on machine tools, and wherever there are any oil lubricating systems or water cooling devices. The indicators have been installed in gasworks at Sheffield, Birkenhead, Bristol and Wandsworth.

*'Shoflo' indicator.*

The 'Shoflo' indicates whether or not liquid is flowing in a pipeline and it also prevents reverse flow taking place. It has a bowl shaped body with a centrally situated tube into which a moulded ball fits closely. The cover is a toughened glass dome which, it is claimed, has been hydraulically tested at 300 lb. per sq. in.

When no liquid is flowing the ball remains hidden within the tube. It rises to the top of the tube immediately flow commences. As the flow increases so does the speed of oscillation of the ball. At very low flows the ball may revolve steadily at the entrance to the tube, and in order to make the movement more noticeable, the ball is made from two contrasting colours of material moulded together.

The ball and sealing washers are made from oil and heat-resisting moulded synthetic materials. The ½ in. size instrument has an aluminium bronze body, while that for the 1½ in. size is made from gunmetal.



*Miniature overhead radiant gas heater.*

Although the manufacturers of the 'Shoflo' claim that it can be used for water and a wide range of oils, spirits, industrial liquids, *etc.*, they do not recommend it for dark coloured liquids which would obscure the ball.—*Measurement Ltd., 119, Union Street, Oldham, Lancs.*

### Protective helmet

Danger of injury to maintenance workers from flying particles, acid, and other corrosive sprays, is claimed to have been eliminated by use of the R.F.D. Updraft protective helmet. Polyvinyl chloride (PVC) is used in the helmet in two different ways. The helmet itself—both outer shell and face shield—is in rigid Geon PVC, which is chemically resistant, non-flammable, and highly resilient, and the acid proof cape is made of a PVC-coated fabric.

The helmet and cape are claimed to ensure that the wearer is adequately protected against the hazards encountered in every chemical factory. PVC, however, is not heat-resistant—it begins to soften at about 65°C.—and is, therefore, not recommended for high temperature work.—*British Geon, Ltd., Devonshire House, Piccadilly, London, W.1.*

## TRADE PUBLICATIONS

### Refractories

The Morgan Crucible Co., Ltd., of Battersea Church Road, S.W.11, has issued a leaflet, entitled *A new way of loking at Fuel Economy*, which describes the applications of Morgan refractories in furnaces.

### Vacuum equipment

Several new leaflets have been issued by Edwards High Vacuum, Ltd., of Crawley, Sussex, which are intended to supplement their catalogue on vacuum equipment. The leaflets deal principally with vacuum gauges and coatings.

### Positive-action pumps

A recently published pamphlet by the Comet Pump & Engineering Co., Ltd., of West Croydon, Surrey, which describes the company's latest range of positive-action pumps, states: 'If Comet can't pump it, it can't be pumped.'

### Solders and Fluxes

A folder of seven technical publications on solders and fluxes has been published by Fry's Metal Foundries, Ltd., London, S.W.19. Of particular interest to those engineers who are advancing their methods by the installation of electrical instrumentation is *Fluxes for Electrical Work*. In soldering electrical equipment one consideration is paramount: the residues from the flux must be harmless both to metal and insulation. This consideration rules out the popular fluxes of the active type, and in the past plain resin has been used almost universally. The use of so weak a flux increases the danger of dry or high resistance joints which may be difficult to locate or may cause trouble only after the equipment has been put into service. Alcho-re fluxes, in the forms of fluid, paste, cream, powder, or core, are recommended to meet the need for improved fluxing properties while retaining absolute freedom from corrosive effect. *Soldering of Aluminium* describes how, with modern methods, the soft soldering of aluminium is practicable, requiring no special equipment and so that it can be carried out without subjecting the metal to high temperatures. The other booklets deal variously with solders, solder paint, and soldering methods.

---

**The Nevelin Electric Co., Ltd.,** have moved to a newly acquired factory in Surrey, on a 30 acre site. The new address to which all communications should be sent is:—*Nevelin Electric Co., Ltd., Hurst Green, Oxted, Surrey.*

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Calibrated Jets & Injectors
to meet a specification of consumption
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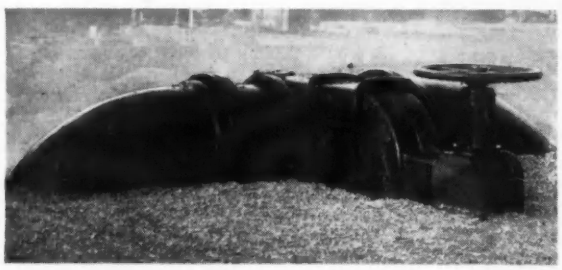

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Quarterly Volumes of the "Gas Journal."
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# PUBLISHERS' NOTICE

The " Gas Journal " is published every Wednesday, price **1/6d.**; by post **1/8d.**

**Subscription Rates:** Home and Empire:—**60/-** per annum; Foreign:—**70/-** per annum. (Both payable in advance.) A copy of the " Gas Journal " Calendar & Directory is presented each year to continuous subscribers.

**Classified Advertisements:** All small classified advertisements are charged at **2/-** per line (approx. **7** words)—minimum charge **10/-**. A Box Number address occupies **2** lines, and a further **6d.** is charged towards cost of postage on replies. Copy must be received by first post on Monday to ensure insertion in that week's Journal.

**Displayed Advertisements:** Rates obtainable on application to the Business Manager. Change of copy for displayed spaces must be received **14** days prior to publication if proofs are required. Type area of inside pages **10** in. deep × **7** in. wide; block screen **120**.

**BUSINESS MANAGER: S. T. CULLEN**

MIDLANDS MANAGER: G. B. Torrance, 42, Wychall Lane, King's Norton, Birmingham, 30. *Telephone:* King's Norton 3868.

NORTHERN MANAGER: Philip W. B. King, Flat 1, 7 Langcliffe Avenue, Harrogate. *Telephone:* Harrogate 67625.

SOUTHERN REPRESENTATIVE: A. Engelhardt, 11, Bolt Court, Fleet Street, E.C.4. *Telephone:* Fleet Street 2236-7.

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## APPOINTMENTS VACANT

*The engagement of persons answering these advertisements must be made through a Local Office of the Ministry of Labour or a Scheduled Employment Agency if the applicant is a man aged 18-64 inclusive or a woman aged 18-59 inclusive unless he or she, or the employment, is excepted from the provisions of the Notification of Vacancies Order, 1952.*

**ASSISTANT, technical, required for development** work on controls for the Gas Industry.

Preference for man 20-24, National Service completed and studying for degree in physics or engineering or H.N.C. Interesting work in a progressive Company.

Apply with full particulars to:—Technical Manager, Engineering Division, Evered & Co., Ltd., Surrey Works, Smethwick 40.

### EASTERN GAS BOARD

(CAMBRIDGE DIVISION)
TECHNICAL ASSISTANT—
BEDFORD DISTRICT

**APPLICATIONS are invited for the above position.** The salary will be within Grades APT 6/7 (£565/£700) of the National Joint Council for Gas Staffs, Provincial 'A' Scales.

The successful candidate may be required to pass a medical examination and, unless already subject to a Pension Scheme by virtue of the Gas (Pension Rights) Regulations 1950, will be required, if eligible, to join the Board's Staff Pension Scheme.

Candidates should have had a basic training in engineering and possess a higher grade certificate of the Institution of Gas Engineers (Manufacture) or its equivalent and have had some experience in the operation and control of gas manufacturing plant.

Applications stating age, qualifications and experience together with the names of two referees should be addressed to the undersigned to reach him within fourteen days of the appearance of this advertisement.

General Manager,

Eastern Gas Board (Cambridge Division),
52, Sidney Street, Cambridge.

### EASTERN GAS BOARD

(CAMBRIDGE DIVISION)
FEMALE HOME SERVICE ADVISER
PETERBOROUGH DISTRICT

**APPLICATIONS are invited for the position of** HOME SERVICE ADVISER at the Peterborough District. Candidates should possess a recognised Diploma in Cookery or Domestic Science and be capable of giving expert advice on the use of domestic gas appliances, conducting public demonstrations, and district home service calls. Salary will be within the range of £430 to £494, the initial placing depending on age and experience.

The successful candidate may be required to pass a medical examination, and unless already subject to a Pension Scheme by virtue of the Gas (Pension Rights) Regulations 1950, will be required, if eligible, to join the Board's Staff Pension Scheme within six months from taking up the appointment.

Applications stating age, experience, present position, training and qualifications, together with the names of two referees, should reach the undersigned within 14 days of the appearance of this advertisement.

J. HUNTER-RIOCH,
General Manager.

52, Sidney Street,
Cambridge.
October 27, 1955.

### SOUTH WESTERN GAS BOARD

TECHNICAL ASSISTANT—DISTRIBUTION

**APPLICATIONS are invited for the post of** TECHNICAL ASSISTANT—Distribution in the Bath District.

Applicants should have a sound theoretical knowledge and some practical experience in both Mains and Fittings work; Drawing Office experience would be an advantage.

Duties will comprise technical work, generally within the district, and include acting as Clerk of the Works on occasions, the execution of district pressure surveys and assisting with the preparation of distribution schemes.

The commencing salary will be within the range of A.P.T. Grade 5/7 (£530-£700) per annum, according to experience and qualifications. A Board owned house will be available for occupation by the successful applicant, subject to a charge to be determined.

Applications giving age, education and qualifications, together with full details of posts held and experience, should be addressed to the Divisional Engineer & Manager, South Western Gas Board, Radiant House, Bristol, 1.

### NORTH WESTERN GAS BOARD

**APPLICATIONS are invited for the following** pensionable appointments:—

NORTH CHESHIRE GROUP
SENIOR TECHNICAL ASSISTANT (Production)—
Hyde Works

(Salary within Grade A.P.T. 8 £660/£740 per annum)

The successful applicant will be responsible to the Station Engineer for the Supervision and technical control of a Woodall-Duckham continuous vertical retort plant and all other works operations.

Applicants should possess the Higher Grade Certificate (Manufacture) of the Institution of Gas Engineers or an equivalent qualification.

Detailed applications, giving the names of two referees, should reach the General Manager, N.W.G.B. (North Cheshire Group), Great Portwood Street, Stockport, within 14 days.

SOUTH LANCASHIRE GROUP
ENGINEERING DRAUGHTSMAN

The salary will be within Grades A.P.T. 6/8 (£565/£740 per annum) according to qualifications and experience.

Applicants should possess a sound engineering training, preferably with a knowledge of building construction, steel structures, pipe layouts and/or foundation designs.

Detailed applications, giving the names of two referees, should be sent to the General Manager, N.W.G.B. (South Lancashire Group), Radiant House, Cotham Street, St. Helens, within 14 days.

SALES AND SERVICE DIVISION
TECHNICAL ASSISTANT—Physical Testing
Laboratories, Salford.

The salary will be within Grades A.P.T. 5/7 (£530/£700 per annum) according to qualifications and experience.

The laboratories are concerned with the testing of appliances and equipment for the domestic and commercial utilization of gas and coke.

Applicants should possess an advanced General Certificate with science subjects or a National Certificate in Chemistry or Physics. Consideration will also be given to applications from members of sales staffs who have studied gas supply or who possess other equivalent qualifications.

Detailed applications, giving the names of two referees, should reach the Secretary, N.W.G.B., 60, Whitworth Street, Manchester, 1, within 14 days.

(*Classified advertisements continued on page* 348)

**There was nothing one-eyed about Nelson . .**

. . . when it came to victory at sea, but many people with normal sight have a blind spot about photography. The fact is that instead of going to any old photographer, it *pays* you to go to an expert because the results are exactly what you want. If you consult **Walter King Photographs,** 11, Bolt Court, Fleet Street, E.C.4. (Telephone FLEet Street 2236) you will find their prices are no more. As for their work—well, you can see the difference with half an eye.

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*The sign of BETTER Photography*

## APPOINTMENTS VACANT (*ctd.*)

**EAST MIDLANDS GAS BOARD**

LINCOLNSHIRE DIVISION
APPOINTMENT OF GASFITTING FOREMAN, SCUNTHORPE GROUP

**APPLICATIONS are invited for the position of** GASFITTING FOREMAN in the Scunthorpe Group. Applicants must possess a City and Guilds First Class Gasfitter's Certificate.

The salary payable will be within APT. 4a of the National Salary Scales for Gas Staffs (£495/£575) according to experience.

The position is pensionable, and the successful applicant will be required to pass a medical examination.

Applications stating age, experience and present position together with the names of two referees, should be addressed to the Group Manager, East Midlands Gas Board, Dawes Lane, Scunthorpe, Lincs., to arrive not later than November 19, 1955.

BERNARD CLARKE,
Divisional General Manager.

**DRAUGHTSMEN required by London Company.** Experienced in Steel Plate constructional work. Salary according to experience.—Write No. 261, *Gas Journal*, 11, Bolt Court, Fleet Street, London, E.C.4.

**WALES GAS BOARD**

CARDIFF UNDERTAKING
ENGINEERING DRAUGHTSMAN

**APPLICATIONS are invited for the above-** mentioned position at the Grangetown Works of the Cardiff Undertaking.

Candidates should possess the National Certificate in Mechanical Engineering, or equivalent qualification, and preference will be given to those having experience in the Gas Industry.

The successful candidate will be required to undergo a medical examination and to subscribe to the Board's Superannuation Scheme.

The salary will be within Grade A.P.T. 6, Provincial 'A' (£565-£645 per annum) of the scales agreed by the National Joint Council for Gas Staffs.

Applications stating full personal particulars and experience, giving the names of two referees, should be addressed to the undersigned and posted so as to arrive within 14 days of the appearance of this advertisement.

J. POWDRILL,
General Manager & Engineer.

Gas Offices,
Bute Terrace,
Cardiff.

**WEST MIDLANDS GAS BOARD**

WORCESTERSHIRE-HEREFORDSHIRE DIVISION
WORKS CHEMIST
REDDITCH GROUP

**CANDIDATES should hold an appropriate qualifi-** cation and should be capable of exercising chemical control of modern gasworks processes.

The salary will be within Grade 7 (£620-£700 per annum) of the National Salary Scales for Gas Staffs.

The post is pensionable, and the successful candidate may be required to pass a medical examination.

Applications, giving details of age, qualifications and experience, together with the names of two referees, should be addressed to Mr. C. F. W. Rendle, Divisional General Manager, West Midlands Gas Board, Divisional Offices, Newtown Road, Worcester, to reach him not later than November 15, 1955.

J. C. INGRAM,
Secretary to the Board.

**WEST MIDLANDS GAS BOARD**

BIRMINGHAM DISTRICT
SHIFT SUPERVISOR—NECHELLS WORKS

**CANDIDATES must be fully qualified to take con-** trol of the whole of the Works during periods when normal day technical staff is absent. They should have had experience in the Retort House; possess a sound working knowledge of water gas manufacture, steam production and purification; be conversant with the operation of boosters and exhausters and also understand the operation of gasholders.

The possession of a technical qualification, such as a Certificate in the Technology of Gas Manufacture or its equivalent will be an advantage.

The salary will be within Grade 9 (£700-£800 per annum) of the National Salary Scales for Gas Staffs.

The post is pensionable, and the successful candidate may be required to pass a medical examination.

Applications stating age, personal details, particulars of training, experience and qualifications, together with the names of two referees, should be addressed to Mr. J. E. Wakeford, Divisional General Manager, West Midlands Gas Board, Birmingham and District Division, Gas Offices, Edmund Street, Birmingham, 3, to reach him not later than November 15, 1955.

J. C. INGRAM,
Secretary to the Board.

**WEST MIDLANDS GAS BOARD**

WARWICKSHIRE DIVISION
ASSISTANT TO SHOWROOMS MANAGER
LEAMINGTON SPA/WARWICK DISTRICT

**CANDIDATES must be familiar with domestic ga** appliances and should have had sales experience.

The salary will be within Grade 4 (£365-£555 per annum) of the National Salary Scales for Gas Staffs.

The post is pensionable, and the successful candidate may be required to pass a medical examination.

Applications stating age, personal details and particulars of training and experience, together with the names of two referees, should be addressed to Mr. A. Allen, Divisional General Manager, West Midlands Gas Board, Gas Street, Coventry, to reach him not later than November 15, 1955.

J. C. INGRAM,
Secretary to the Board.

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Air pressures between ¼ lb. and 1 lb. are used normally but in special instances up to 2 lb. can be used.

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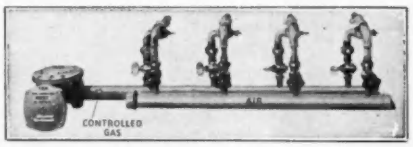


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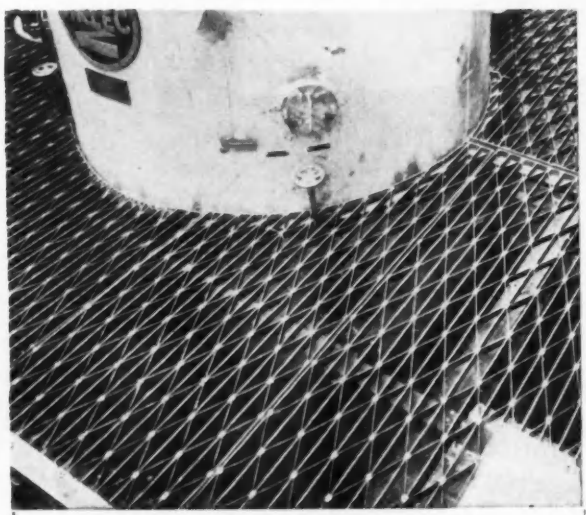

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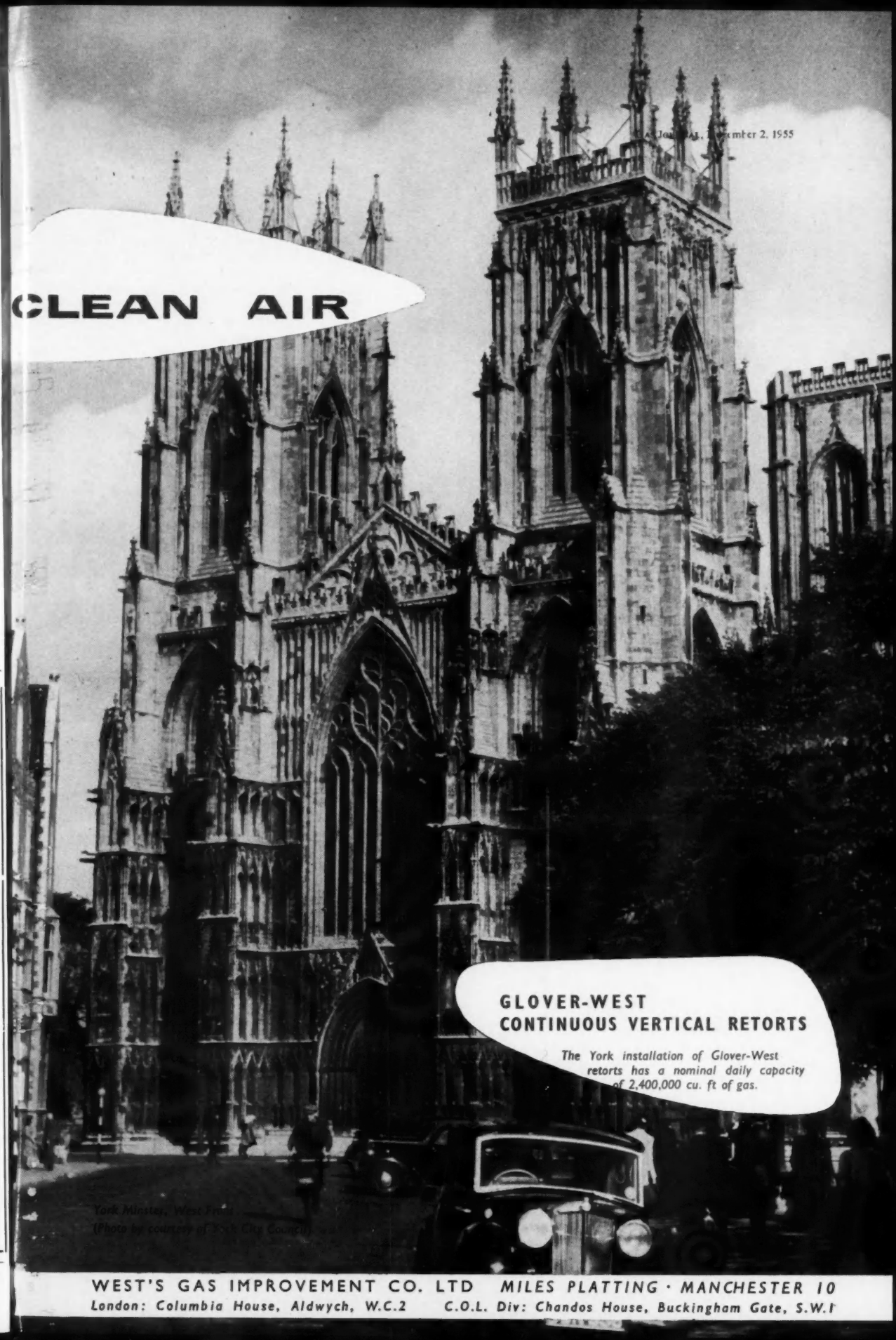
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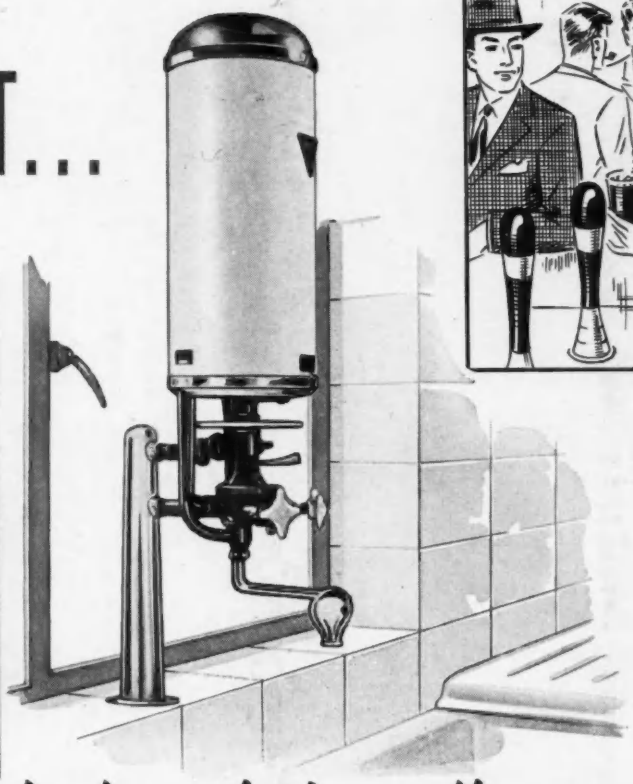

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